NAVSHIPS 0967-203-8010
(Formerly 94127)

(Non-Registered)

TECHNICAL MANUAL

for

ANTENNA GROUP AN/SRA-17B

DECITRON ELECTRONICS CORPORATION
Brooklyn, New York

DEPARTMENT OF THE NAVY
BUREAU OF SHIPS

CHANGE 1 to Technical Manual for Antenna Group AN/SRA-17A
NAVSHIPS 93679

This permanent change revises the book to current omissions and reflect the equipment changes to the AT-252/SR antenna modified to AT-924A/SR.

Maintenance Support Activities shall insert this change in the technical manual immediately upon receipt. When this Change is included in the manual the manual shall cover the equipment as though equipment change has been accomplished on the equipment.

When inserted Change 1 supersedes original Manual. No Temporary corrections are in existence.

1. Remove superseded pages and insert revised pages as indicated below:

Page	Remove	Insert
T.P./ii	Orig/Orig	Ch 1/Ch 1
1-1/1-2	Orig/Orig	Ch 1/Ch 1
2-1/2-2	Orig/Orig	Ch 1/Ch 1
2-3/2-4	Orig/Orig	Ch 1/Orig
4-1/5-0	Orig/Orig	Ch 1/Ch 1
7-OA/Blank	- - -/- - -	Chg 1/Blank
7-1/7-2	Orig/Orig	Chg 1/Orig

2. Make the following pen and ink corrections and mark "ch. 1" adjacent to the pen and ink corrections.

First Issued In	Page No	Ch. In Effect	Col'm or Fig.	Line or Location	Action
Orig.	1-0	Orig.	1-1	Top	Change Antenna AT-252/SR to read AT-924A/SR
Orig.	7-6	Orig.	Table 7-3	Bottom	add the following "Linear" in col 1 "Linear Inc" in col 2 "State Rd, Phila. Pa" in col 3

3. Destroy superseded pages but not until the complete manual has been checked against the "List of Effective Pages"

4. Insert this Instruction Sheet just behind the front cover.

5. Make appropriate entry on correction page.

NAVSHIPS 93679 *(Non-Registered)*

TECHNICAL MANUAL

for

ANTENNA GROUP AN/SRA-17 A

LIECO INC.
130 EILEEN WAY
SYOSSET, N.Y.

DEPARTMENT OF THE NAVY

BUREAU OF SHIPS

Contract NObsr—75382

Approved by BuShips: 26 August, 1960
Change Number One: 16 February, 1961

LIST OF EFFECTIVE PAGES

PAGE NUMBERS	CHANGE IN EFFECT	PAGE NUMBERS	CHANGE IN EFFECT
Title Page	Change 1	3-1 to 3-2	Original
ii	Change 1	4-1	Change 1
iii to vii	Original	5-0	Change-1
1-0	Change 1	5-1 to 5-2	Original
1-1 to 1-2	Change 1	6-1 to 6-6	Original
2-1 to 2-3	Change 1	7-OA-7-OB	Change 1
2-4	Original	7-1	Change 1
		7-2 to 7-5	Original
		7-6	Change 1
		i-1, i-2	Original

SECTION 1

GENERAL INFORMATION

1-1. INTRODUCTION.

This Technical Manual covers the theory, installation and maintenance of Antenna group AN/SRA-17A.

1-2. FUNCTIONAL DESCRIPTION.

Antenna Group AN/SRA-17A provides a physically small, but efficient receiving antenna covering the VLF-LF frequency range, for installations where interaction between large, closely spaced antennae would present a problem, and on smaller craft where space for a long wire antenna is not available.

b. GENERAL. Antenna Group AN/SRA-17A (fig. 1-1) consists of one 10½ foot vertical whip antenna, one radio frequency tuner, and one antenna control unit.

c. ANTENNA. The antenna consists of a 10½ foot stainless-steel tubular whip and its mounting. The assembly is a complete unit, Navy type AT-924A/SR. The antenna mounted on a 12-inch square steel plate which forms part of the radio frequency tuner housing. The antenna is connected to a Navy type RBA or AN/SRR-11 receiver by a 72 ohm cable (not furnished).

d. RADIO FREQUENCY TUNER TN-344/SRA-17. The radio frequency tuner consists of two variable inductors (Increductors) and a silicon diode noise source, plus associated relays for switching the proper inductors and noise source into the circuit. The noise source is used as a tuning aid, since the antenna control has no calibrated dial. The tuner is mounted on a small chassis which fits into the radio frequency tuner housing.

e. ANTENNA CONTROL C-2536A/SRA-17. The antenna control unit provides a regulated d.c. power supply for the operation of the relays and variable inductors in the radio frequency tuner unit. The antenna control unit is located at the receiver position, thus enabling the operator to tune the antenna from this remote location. Interconnection is made to the radio frequency tuner unit by a control cable (not furnished).

1-3. QUICK REFERENCE DATA.

a. Frequency range — 14kc - 600kc
(1) Tuning Bands — band 1: 14kc - 38kc
band 2: 38kc - 95kc
band 3: 95kc - 235kc
band 4: 235kc - 600 kc

b. Type of frequency adjustment. — Frequency is adjusted by varying the dc current thru the variable inductors by means of potentiometer R6.

c. Antenna impedance — 72 ohms.

d. Sensitivity — 20 db signal to noise ratio minimum sensitivity.

RBA Band 1 - 15kc - 13.4 Microvolts.
25kc - 10.8 Microvolts.
38kc - 12.9 Microvolts.
Band 2 - 38kc - 5.1 Microvolts.
65kc - 5.0 Microvolts.
95kc - 5.7 Microvolts.
Band 3 - 95kc - 5.0 Microvolts.
165kc - 4.6 Microvolts.
235kc - 5.6 Microvolts.
Band 4 - 235kc - 3.1 Microvolts.
420kc - 3.0 Microvolts.
600kc - 4.2 Microvolts.

TABLE 1-1. EQUIPMENT SUPPLIED

QUANTITY PER EQUIPMENT	NOMENCLATURE		OVERALL DIMENSIONS*				
	Name	Designation	Height	Width	Depth	Volume*	Weight*
1	Antenna Control	C-2536A/SRA-17	4½	12½	12	.892	14
1	Radio Frequency Tuner and housing	TN-344/SRA-17	10½	12	12	.904	22
1	Antenna	AT-924A/SR	131	7 dia. at widest point			20
1	Connector	AN3106A-14S-9S					
1	Connector	AN3106A-18-8P					
1	UHF Connector	PL-259,49190					
1	UHF Connector	SO-239,49194					
1	UHF Shield	UG-106/U,M-360					
2	Technical Manual	NAVSHIPS 93679					

*Unless otherwise stated, dimensions are in inches, volume in cubic feet, weight in pounds.

e. Operating characteristic of power supply 117 Volts AC 60 cps single phase.

1-4. EQUIPMENT LISTS.

A list of equipment supplied is contained in Table 1-1. Table 1-2 lists equipment required but not supplied. Shipping data on equipment and publications supplied is given in Table 1-3. Electron tube complement is contained in Table 1-4.

TABLE 1-2. EQUIPMENT REQUIRED BUT NOT SUPPLIED

QUANTITY PER EQUIPMENT	NOMENCLATURE		REQUIRED USE	REQUIRED CHARACTERISTICS
	Name	Designation		
1	Coaxial Cable	RG-12U	Connect radio frequency tuner to receiver	Length as required at installation
1	Power Cable	DCOP-2	Connect antenna control to power supply	Length as required at installation
1	G.R. type* female connector	NT49121-A	Fitting for RG 12/U cable	
1	Control Cable	TTRSA-4	Connect output of antenna control to radio frequency tuner input	8-conductor shielded cable length as required at installation

*For RBA receivers, Type N for AN/SRR-11

TABLE 1-3. SHIPPING DATA

BOX NUMBER	NOMENCLATURE		OVERALL DIMENSIONS				
	Name	Designation	Height	Width	Depth	Volume*	Weight*
1	Antenna Control Radio Frequency tuner	C-2536/SRA-17 TN-344/SRA-17A	24½	15	15	3.12	100
2	Whip Antenna	AT-924A/SR	6	6	10½ ft.	.219	35

*Unless otherwise noted, dimensions are in inches, volume in cubic feet, and weight in pounds; equipment crated and ready for shipment.

TABLE 1-4. ELECTRON TUBE COMPLEMENT

UNIT	NUMBER OF TUBES OF TYPES INDICATED	
	5Y3 WGTA	VR 105
Antenna Control	1	1

SECTION 2

INSTALLATION

2-1. UNPACKING AND HANDLING.

Antenna AT-924A/SR is secured in its crate by small wood blocks. All nails securing these blocks must be removed before attempting to lift the antenna from the crate.

2-2. SITE SELECTION.

Antenna Group AN/SRA-17A is designed for shipboard installation. For optimum performance Antenna AT-924A/SR and the radio frequency tuner should be mounted in a clear space near the top of a mast, king post, stack or other vertical portion of the superstructure. Vertical mounting of the antenna is necessary as insulator bowl may be strained when the antenna is mounted in a horizontal position. The antenna control unit is installed in the radio room directly above the radio receiver with which it is to be used.

2-3. POWER REQUIREMENTS.

The antenna tuning unit operates on 117V AC 60 cycle single phase current. A power cord is required, using Plug AN3102A-14S-9P to connect the tuning unit to the power supply.

2-4. INSTALLATION REQUIREMENTS.

a. INSTALLATION OF RADIO FREQUENCY TUNER HOUSING AND ANTENNA CONTROL UNIT.

(1) The radio frequency tuner housing, which supports the antenna is secured to a 12 x 12 inch steel plate. If the housing is mounted against a vertical surface, the steel plate should be welded in position with the access door facing outward. Gussets welded on either side of the plate will not interfere with maintenance. Two holes must be made in the tuner housing, one for the RG-12/U RF cable (not furnished), the other for the 8 conductor, shielded control cable (not furnished). Both cables must enter the tuner housing through stuffing tubes. The cables can enter the tuner housing wherever they will not prevent the removal of the R.F. Tuner.

(2) The end of the RG-12/U cable which enters the tuner housing should be terminated with a UHF male connector, type PL-259 (supplied). The cable is connected to the R.F. tuner by means of a UHF female connector, type SO-239, equipped with a length of shielded lead (supplied). The shielded lead will have to be cut to size and connected to E202 and the shield grounded at the ground lug located directly below E202.

(3) The receiver end of the RG-12/U cable is terminated with a type G.R. female connector (not supplied). If it is desired to use the AN/SRA-17A with a VLF/LF receiver other than the RBA, it may be necessary to use a different fitting.

(4) The AN/SRA-17A was designed to use 100 feet of RG-12/U cable between tuner and receiver. It is preferable to keep the cable less than 150 feet long. Satisfactory performance will be obtained with lengths up to 300 feet.

(5) One end of the 8 conductor cable which enters the R.F. tuner housing should be stripped ½ inch of its outer sheath. Strip each conductor back 3/16 inch and tin leads.

(6) Disassemble S201 as follows: Remove the spring support studs from the chassis with a 3/16 inch open end wrench; remove the two pan head screws securing the shell to the connector; lift shell from connector.

(7) Run cable thru cable clamp and shell.

(8) Solder the 8-conductor cable to connector as shown in fig. 2-1.

(9) Reassemble connector making certain that the cable is facing the direction of the stuffing tube.

CAUTION

DO NOT USE MORE THAN 15 FT./LBS OF TORQUE WHEN TIGHTENING THE 14 NUTS SECURING THE ACCESS DOOR ON THE RADIO FREQUENCY TUNER HOUSING.

b. INSTALLATION OF ANTENNA

Antenna AT-924A/SR is mounted on the tuner housing by six half-inch bolts welded to the steel plate. The tuner housing is shipped with the antenna insulator bolted on the plate. The insulator must be removed to attach the whip antenna to it. A 5 inch flexible antenna lead must be attached to the antenna before the insulator is again mounted on the R.F. tuner housing. The other end of the antenna lead should be connected to insulator E201 in the center of the R.F. tuner chassis.

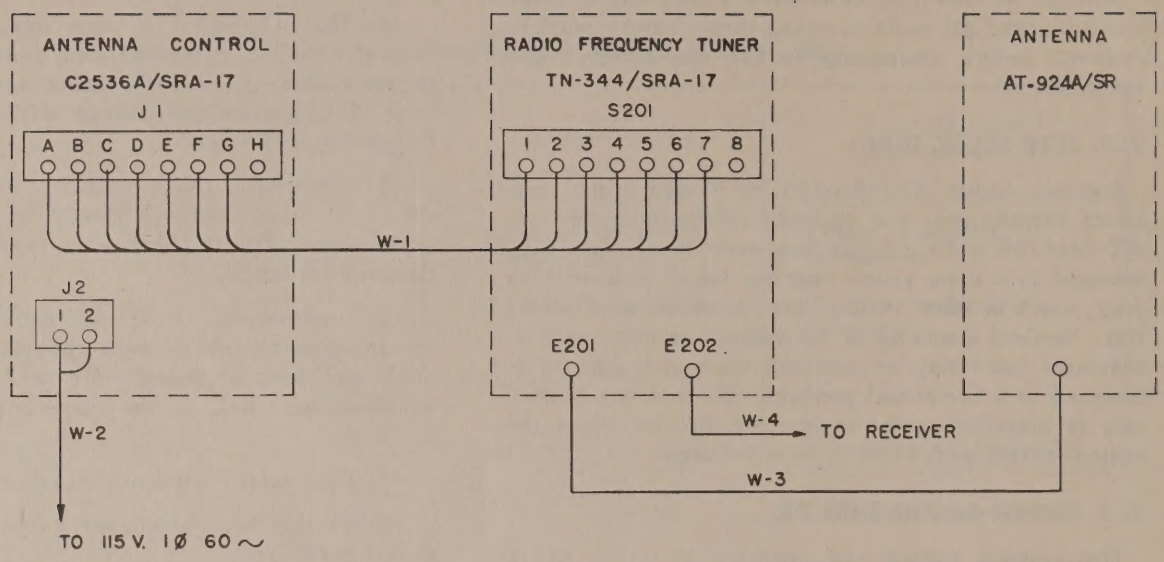
See fig. 2-2 for assembly of parts.

NOTE

Lubricate 'O' Rings with DC-4 compound or equal before installation. The 'O' Ring mounting surfaces must be smooth, free of chips, and foreign material.

2-5. PREPARATION FOR RESHIPMENT.

Remove Antenna AT-924A/SR from the insulator, replace insulator onto R.F. tuner housing and tighten bolts securely. Protect insulator with corrugated cardboard or equivalent. Protect antenna from deformation due to rough handling. Mark the box containing technical manuals "TECHNICAL MANUALS INSIDE".



SYMBOL	NAVY TYPE	NO. ACT. COND.	COLOR	PAIR	FROM	JACK PLUG	PIN	TO	JACK PLUG	PIN	FUNCTION	COND. AMP.	SUPPLIED BY
W-1	TTRSA-4	7	WT.	1	ANT. CONTROL	J1	A	RF. TUNER	S201	1	GROUND		INST. ACTIVITY
			WT.	2		P1	B			2	INCREDUCTOR CONTROL CURRENT	.04 AMP	
			BLK.	2			C			3	RELAY CONTROL 80V.	8 MA	
			WT.	3			D			4	NOISE GENERATOR 105 V.	—	
			BLK.	3			E			5	RELAY CONTROL 80V.	8MA	
			WT.	4			F			6	RELAY CONTROL 80V.	8MA	
			BLK.	4			G			7	RELAY CONTROL 80V.	8MA	
W-2	DCOP-2	2	WT.			J2	1	115 V.	—	—	AC. POWER SUPPLY	—	INST. ACTIVITY
			BLK.			P2	2	1 Ø 60 ~					
W-3	—	1	BLK.		E 201	—	-	ANT	—	—	SIGNAL COUPLING	—	CONTRACTOR
W-4	RG-12/U	COAX.	INNER SHIELD		E 202	J201 P201	CENTER SHELL	RECEIVER	SEE NOTE 1		SIGNAL COUPLING GROUND	—	INST. ACTIVITY

Figure 2-1. Antenna Group AN/SRA-17A Interconnecting Diagram.

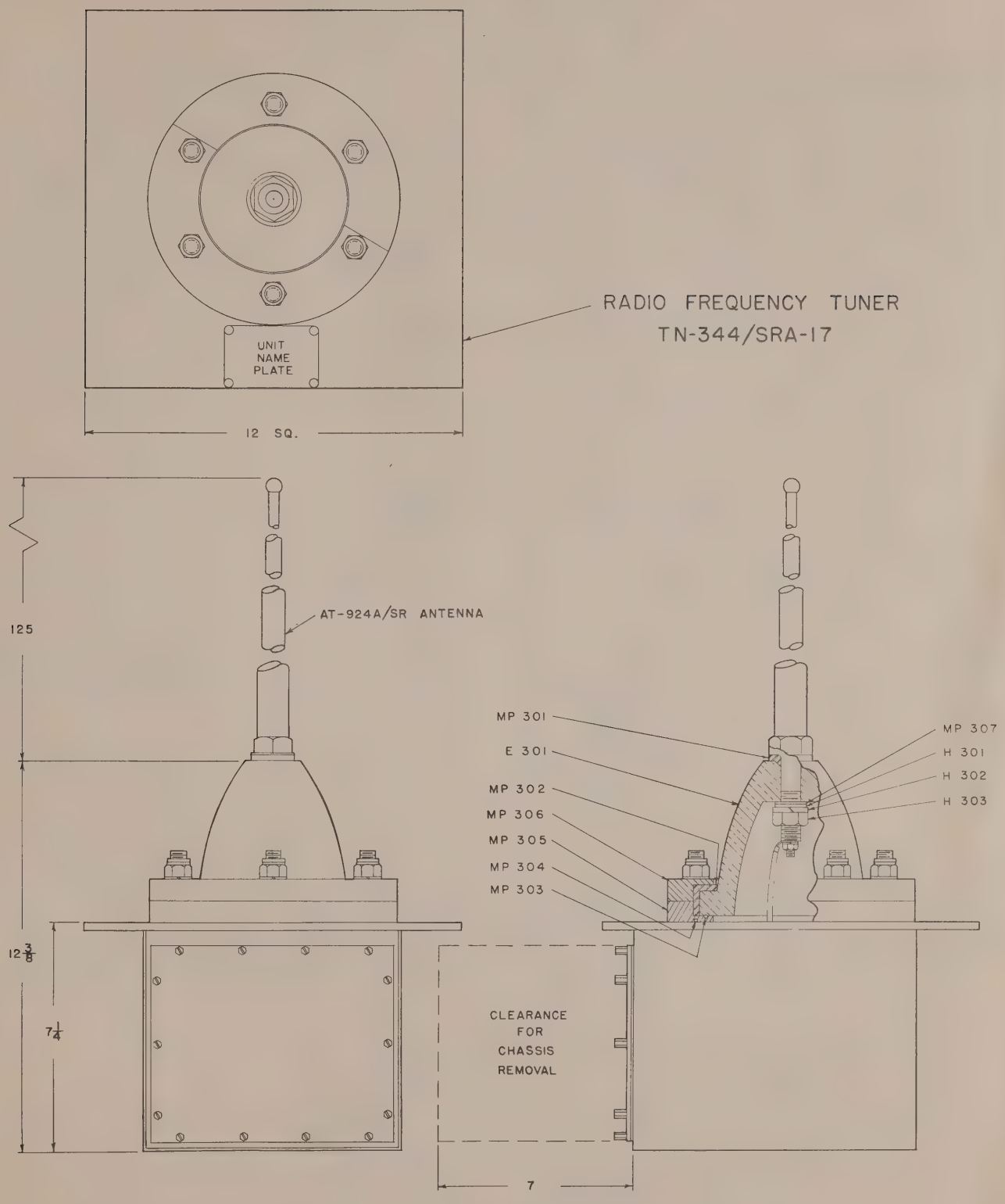
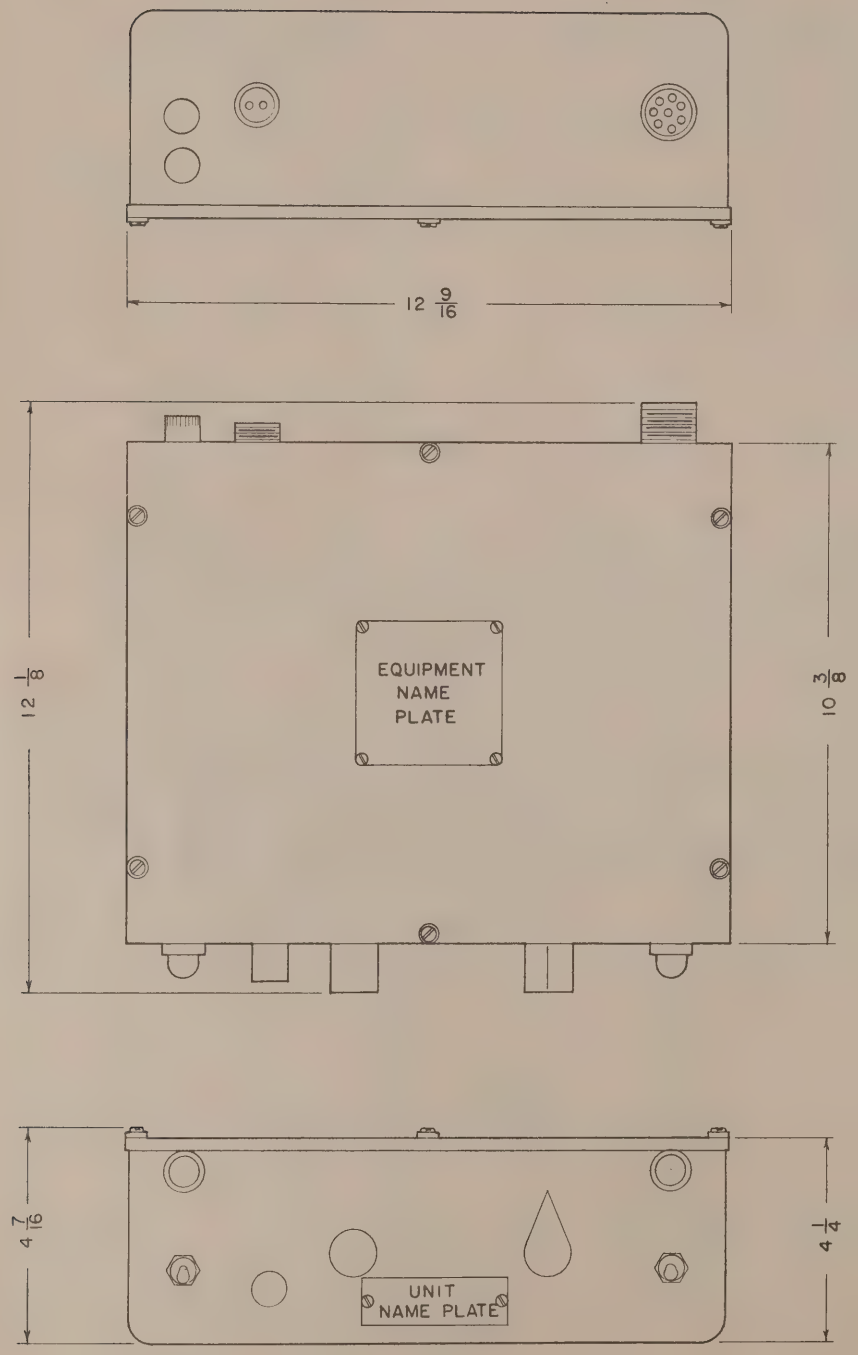


Figure 2-2. Radio Frequency Tuner TN-344/SRA-17 Outline Drawing.



ANTENNA CONTROL
C-2536A/SRA-17

Figure 2-3. Antenna Control C-2563A/SRA-17A Outline Drawing.

SECTION 4

PRINCIPLES OF OPERATION

4-1. OVERALL FUNCTIONAL DESCRIPTION.

Antenna Group AN/SRA-17A is divided for circuit discussion into (1) antenna control unit, (2) radio frequency tuner unit, and (3) noise generator circuit.

a. ANTENNA CONTROL UNIT.–The antenna control unit provides d.c. power to the radio frequency tuner through an 8-conductor shielded cable. A steady drain of approximately 10 milliamps is taken from the unregulated portion of the antenna control circuit for operation of relays K201, K202, and K203 in the R.F. Tuner. The relays, which have their coils in series, are actuated through the range selector Switch S3. To keep a constant 10 ma drain, a resistor having equivalent coil resistance is switched into the circuit when a relay is switched out.

The regulated output (105 volts) of the antenna control unit supplies current for the control windings of the variable inductors L201 and L202. The control winding current can be varied from 0 to 30 ma maximum by tuning potentiometer R6A-B. The tuning potentiometer is varied to resonate the inductor-antenna series circuit. Resistors R11, R12, and R13 in the increductor control winding circuit are used to give a bandspread effect for ease in tuning. A regulated voltage is also supplied for operation of the noise generator.

b. RADIO FREQUENCY TUNER.–The radio frequency tuner series tunes the antenna at its base through variable inductor L201 or L202.

The Increductor (variable inductor) consists of a signal winding and a control winding. These two windings are wound over a special ferro-magnetic core material. They are separated by an electrostatic shield to prevent capacitive coupling. Varying the d.c. current through the control winding changes the permeability of the core material and the inductance of the signal winding.

Increductor L201 has a starting inductance (with 0 control current) of 20 millihenries, L202 a starting inductance of 500 millihenries. Increasing the control current lowers this inductance. L202 is used in tuning the antenna from 14-95 kc in two ranges. L201 tunes from 95-600 kc, also in two ranges. Four shunt capacitors, C202 through C205, connected from the antenna side of the signal winding to ground, are used in conjunction with L201 and L202 to increase the starting control current. One is used for each frequency range. This increased current permits tuning at high ambient temperatures.

c. NOISE GENERATOR CIRCUIT.–CR201, a IN21B silicon diode, generates the r.f. noise supplied by the noise generator. Silicon diodes have the property of generating considerable r.f. noise when current is passed through them in the reverse direction, but this reverse current must be kept low in order to prevent damage to the crystal.

The noise generator circuit is mounted on terminal board TB202 in the R.F. tuner chassis. It consists of four components in addition to the diode: C206, C207, R201, and R202. Resistor R201 is the output impedance of the Noise Generator. Resistor R202 limits the current through CR201 to 1.0 milliampere. The generated noise is coupled to the increductor signal winding through the dummy antenna capacitor C206, substituted for antenna AT-924A/SR when the noise generator is in operation. Capacitor C207 acts as a by-pass to isolate the noise generator from the power supply.

By means of the noise source it is possible to tune the actual antenna to a specific frequency quickly and accurately without the aid of a frequency calibrated dial on the antenna control unit. The noise source may also be used as a maintenance tool for rapidly checking the performance of the Antenna Group and associated receiver. See page 3-1.

SECTION 5
TROUBLE SHOOTING

5–1. SAFETY NOTICE.

NOTICE

The attention of the Officers and operating personnel is directed to Chapter 67 of the Bureau of Ships Manual or superseding instructions on the subject of radio safety precautions to be observed.

This equipment employs voltages which are dangerous and may be fatal if contacted by operating personnel. Extreme caution should be exercised when working at equipment maintenance.

KEEP AWAY FROM LIVE CIRCUITS

Operating personnel must at all times observe safety regulations. Do not change tubes or make adjustments inside the equipment with high voltage supply on. Under certain conditions dangerous potentials may exist in circuits with power controls in the off position due to charges retained by capacitors. Always remove power and discharge circuits to ground.

5–2. GENERAL.

a. ANTENNA AT-924A/SR–No maintenance is required by the antenna except for periodic checks of the insulator. The insulator should be cleaned regularly to remove deposits of soot or salt film that might eventually form a path to ground.

b. ANTENNA CONTROL AND RADIO FREQUENCY TUNER.–Maintenance of the antenna control and radio frequency tuner is largely a matter of routine checking and component replacement.

5–3. OVERALL TROUBLE SHOOTING.

a. PRELIMINARY CHECK.–Turn on equipment. If equipment is completely inoperative check fuses and power source. For fuse and tube location see figure 6-2. Check all cables for proper mating.

b. TEST EQUIPMENT AND TOOLS.–No special tools are required to service this equipment. A Multimeter AN/PSM-4B will be required to measure voltages and resistances accurately.

5–4. FUNCTIONAL TROUBLE SHOOTING.

The following tables of resistance and voltage measurements will be helpful in determining which unit and component is malfunctioning. Any deviation of approximately 20 per cent or more from the values indicated will disclose a possible source of trouble.

TABLE 5-1. ANTENNA CONTROL RESISTANCE MEASUREMENTS

PIN	POSITION OF RANGE SELECTOR SWITCH S-5			
	14-38 kc	38-95 kc	95-235 kc	235-600 kc
Noise Generator switch in OFF position				
A	0	0	0	0
B	9100	6400	6000	4000
C	Open	10000	10000	Open
D	Open	Open	Open	Open
E	Open	Open	23000	14000
F	Open	24000	Open	10000
G	Open	Open	Open	Open
H	Open	Open	Open	Open
Noise Generator switch in ON position				
A	0	0	0	0
B	9100	6400	6000	4000
C	Open	Open	Open	Open
D	4500	4500	4500	4500
E	Open	Open	23000	14000
F	Open	23500	Open	Open
G	3400	Open	Open	Open
H	Open	Open	Open	Open
All Readings in Ohms				

Conditions: Tuning potentiometer turned fully clockwise. Equipment off. Readings taken from pins of power output receptacle, J1, to ground.

The parts list section has been corrected by means of the following supplementary table. Always refer to the appropriate supplementary table for a given item first as it completely supersedes any corresponding listing in the basic table. If no information is shown for a given item, then refer to the basic table for the required information.

NOTE

"The stock numbers and support information that appear in this section have been revised. For Federal Stock Numbers and Source, Maintenance and Recoverability Codes refer to the Appropriate Stock Number Identification Table (SNIT) issued by the Electronics Supply Office. The SNIT rather than this publication, shall govern if there is any conflict between stock numbers and support information.

TABLE 7-2A TABLE OF REPLACEMENT PARTS

ANTENNA AT-924/SR

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
301-399		ANTENNA: 14 to 600 kc frequency range. Navy type no. AT-924A/SR	receiving antenna
E301		INSULATOR, STANDOFF: ceramic, glazed per JAN-1-10 NAVY type no. 61277 modified per Lieco Dwg. 340-WAM-002	mounting insulator for whip antenna
H301		WASHER, C.R.E.S. 5/8 in ID; AN 960-C1016	back up washer for MP307
H302		WASHER LOCK: C.R.E.S. 5/8 in ID; heavy, split.	lock washer for H303
H303		NUT: plain, hex; C.R.E.S.; 5/8-18 thread:	retain whip antenna
MP301		GASKET: syn. rubber per MIL-R-900; 1 3/8 in OD; .625 in ID; 3/8 in thk; 45° x 3/16 in chamfer from ID. Lieco part no. 340-WAM-004.	Antenna seal
MP302		SPACER: Dupont neoprene compound 11-002 70 dur. U cup packing 6 1/4 in. nom. size, modified to add 5 in dia hole. Linear series 14.	Restrain E301
MP 303		GASKET: O ring; syn. rubber per MIL-R-6855, class II; 5.359 in ID; .070 in thk.	Seal for E301
MP304		GASKET: O ring; syn. rubber per MIL-R-6855. Class II; 6 in ID; .070 in thk.	Seal for MP305
MP305		RING, MOUNTING: bottom; part of AT-252/SR Antenna, modified to add two O ring grooves. Lieco dwg. 340-WAM-001.	Antenna mounting ring
MP306		RING, MOUNTING: top; part of AT-252/SR Antenna.	Same as MP305
MP307		GASKET: cloth impregnated neoprene; single hole 0.640 in; 1.188 in dia. x 1/8 in thk.	Gasket for whip antenna

SECTION 7
PARTS LIST

7-1. INTRODUCTION.

Reference designations have been assigned to identify all maintenance parts of the equipment. They are used for marking the equipment and are included on drawings, diagrams and the part list. The letters of a reference designation indicate the kind of part, such as resistor, amplifier, electron tubes, etc. The number differentiates between parts of the same genetic group. Parts of the same first major units are numbered from 1 to 199; parts of the second 201 to 299, etc. Sockets associated with a particular plug in device, such as an electron tube or fuse, are identified by a reference designation of the plug in device. For example, the socket for fuse F-7 is designated XF7.

7-2. LIST OF MAJOR UNITS.

Table 7-1 is arranged by groups of reference designations that apply to a major unit.

7-3. MAINTENANCE PARTS LIST.

Table 7-2 lists all major units and their maintenance parts. The parts of each major unit are grouped together. Column 1 lists the reference series of each major unit, followed by the reference designations of the various parts in alphabetical and numerical order. Column 2 refers to the explanatory notes that appear in 7-5 below. Column 3 gives the name and describes the various parts. Complete information is given for all key parts (parts differing from any part previously listed in this table) and sub-key parts (parts identical with a key part but appearing for the first time for a major unit). The name and description are omitted for other parts. However, reference is made to the key part or sub-key part for the data. Column 4 indicates how the part is used and gives its functional location in the equipment.

7-4. STOCK NUMBERS.

Stock numbers of parts used in this equipment can be obtained by referring to the Stock Number Identification Table (SNIT) published by E.S.O.

7-5. NOTES.

The following provide additional information about items listed in table 7-2.

1. If exact replacement is not available replace with resistor made up of the following:

   a. RESISTOR. 1850 ohm 20 watt ww
      N.S. FL213-16-R-21300-64

   b. RESISTOR. 1750 ohm 20 watt ww
      N.S. FL213-16-R-21300-61

7-6. LIST OF MANUFACTURERS.

Table 7-3 lists manufacturers of parts used in the equipment. The first column includes the abbreviations used in table 7-2 to identify manufacturers.

TABLE 7-1. ANTENNA GROUP AN/SRA-17A, LIST OF MAJOR UNITS

REF. DESIG.	QUANTITY	NAME OF MAJOR UNIT	DESIGNATION	COLLOQUIAL NAME	PAGE
1 - 99	1	Antenna Control	C-2536A/SRA-17		
201 - 299	1	Radio Frequency Tuner	TN-344/SRA-17		
301 - 399	1	Antenna	AT-924A/SR		

TABLE 7-2. ANTENNA GROUP AN/SRA-17A, MAINTENANCE PARTS LIST

ANTENNA CONTROL C-2536A/SRA-17

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
C1A, B		CAPACITOR, FIXED, ELECTROLYTIC: 450 vdc, each section; two 10 uf sections; metal case; uninsulated; 1-3/8 in. dia, 2-1/4 in. lg; 7/8-16 thd, 1/2 in. lg threaded mounting section. MIL-C-62 type no. CE42F100R.	Power Supply Filter

TABLE 7-2. ANTENNA GROUP AN/SRA-17A, MAINTENANCE PARTS LIST

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
C2		CAPACITOR, FIXED, PAPER DIELECTRIC: 600 vdc; .01 uf ± 10%; metal case; plastic insulated; hermetically sealed; .375 in. dia, 15/16 in. lg. MIL-C-25 type no. CPO9A1KF103K.	R.F. By-pass
C3		CAPACITOR, FIXED, PAPER DIELECTRIC: 200 vdc; .22 uf ± 10%; metal case; plastic insulated; hermetically sealed; .463 in. dia, 1-7/16 in. lg. MIL-C-25 type no. CPO5A1KC224K.	R.F. By-pass
DS1		LAMP, INCANDESCENT: 6-8 v; T-3-1/4; min. bayonet; SC; clear. MS 155710 (Ships). General Electric type no. 47.	Power Indicator
DS2		Same as DS1	Power Indicator
F1		FUSE, CARTRIDGE: 1 amp; 1-1/4 in. lg, 1/4 in. dia. MIL-F-16160 type no. MS 90079-20-1.	AC Line Fuse
F2		Same as F1	AC Line Fuse
H1		SCREW, EXTERNALLY RELIEVED BODY: brass; zinc plated; 8-32 thd, .586 in. lg, .397 in. lg; undercut head; flat black enamel. Lieco part no. 344NAG013.	Retains Cover Panel
H2		NUT, PLAIN, KNURLED: brass; zinc plated; .250 in. OD, 8-32 thd, .046 in. thk. Lieco part no. 344NAG014.	Retains H1
H3		WASHER, NON-METALLIC: Syn. rubber per MIL-R-900; 7/16 in. OD, 1/8 in. ID, 1/32 in. thk.	Seal for H1
J1		CONNECTOR, RECEPTACLE, ELECTRICAL: low loss plastic dielectric. MIL-C-5015 type no. AN3102A-18-8S; general purpose.	Power output connector
J2		CONNECTOR, RECEPTACLE, ELECTRICAL: low loss plastic dielectric. MIL-C-5015 type no. AN3102A-14S-9P; general purpose.	AC input connector
L1		REACTOR: One coil; 10H inductance; 85 madc; 175 ohms DC resistance. MIL-T-27 type no. TF1A04YY; Chicago Transformer Co. no. RH1085.	B+ Filter choke
MP1		RETAINER, ELECTRON TUBE: small shell octal, RETMA tube base retained. MIL-STD-242 type no. 804.5-1R; general purpose.	Retains V2
MP2		RETAINER, ELECTRON TUBE: intermediate shell octal, RETMA tube base retained. MIL-STD-242 type no. 804.5-3R; general purpose.	Retains V1
MP3		STRAP, RETAINING: brass; zinc plated; 12 gage, 1/2 in. w, 3.825 in. h, 3.3 in. gap. Lieco part no. 344NAG016.	Retains T1
MP4		MOUNT, RESILIENT: syn. rubber per MIL-R-900; 3 in. w, 4 in. lg, 1/4 in. thk. Lieco part no. 344NAG015.	Vibration isolator for T1
MP5		GASKET: syn. rubber per MIL-R-900; 1-3/8 in. sq., 1/16 in. thk; 1/8 in. dia holes in corners; one hole 7/8 in. dia in center. Bendix part no. 10-40450-18.	Chassis seal for J1
MP6		GASKET: syn. rubber per MIL-R-900; 1-1/8 in. sq., 1/16 in. thk; 1/8 in. dia holes in corners; one hole 3/4 in. dia in center. Bendix part no. 10-40450-14.	Chassis seal for J2

CHANGE No. 1 to Technical Manual for Antenna Group AN/SRA-17B, NAVSHIPS 94127

This permanent change shall be inserted in the manual immediately upon receipt so that this manual will cover the original equipment as well as Antenna Group AN/SRA-17C. This change is the first made to NAVSHIPS 94127.

No temporary corrections are superseded.

Excepting these changes, Antenna Group AN/SRA-17C is identical to Antenna Group AN/SRA-17B.

1. Remove superseded pages and insert revised pages as indicated below:

Page	Remove	Insert
T.P. to ii	Orig./Orig.	Ch. 1/Ch. 1
v to 1/0	Orig./Orig.	Ch. 1/Ch. 1
1-1/1-2	Orig./Orig.	Ch. 1/Orig.
2-2A/2-2B	-/-	Ch. 1/Ch. 1
5-9/5-10	Orig./Orig.	Ch. 1/Ch. 1
7-0/7-0A	-/-	Ch. 1/Ch. 1

2. Make the following pen and ink additions but do not delete existing text. At the bottom of every page that is changed, add an asterisk (*) and the following note: "Pen and ink corrections apply only to Antenna Group An/SRA-17C."

PAGE NO.	CHANGE IN EFFECT	PARA & LINE or FIG & LOCATION	ACTION
1-2	Orig.	Table 1-1	Add dimensions for tuner:
			height 16-2/3, width 12, depth 12, volume 1.46, weight 37-1/2. Add asterisk.
			Add dimensions for control unit:
			height 4-1/3, width 14-1/2, depth 12-1/4, volume 5.8, weight 16. Add asterisk.
			Add new components and asterisk:
			1 Conn, Plug, Elec UG-941B/U 1 Conn, Plug, Elec MS3108R-24-20S 1 Conn, Plug, Elec MS3102A-14S-7S 1 Conn, Plug, Elec MS3106A-24-20P
1-2	Orig.	Table 1-2	Add delete sign and asterisk next to stuffing tubes, AN3106B-24-20P, AN3106B-14S-7S and terminal lugs.
2-0	Orig.	Para. 2-3a(1)	After the word "front", add an asterisk and the word "bottom".
		Para. 2-4	Change paragraph title to read, "INSTALLATION PROCEDURES FOR ANTENNA GROUP AN/SRA-17B. Add asterisk.
4-1	Orig.	Figure 4-2	Change R1 to 4.5K and R4 to 270. Add asterisk.
5-6	Orig.	Figure 5-1	Change R1 to 4.5K and R4 to 270. Add asterisk.
6-7	Orig.	Figure 6-2	Change R1 to 4.5K and R4 to 270. Add asterisk.
			Under E202, add J202. Add asterisk.
			Draw P201 between P1 and TB201. The terminals of P201 are the same as those of P1. Add asterisk.

PAGE NO.	CHANGE IN EFFECT	PARA & LINE, or FIG & LOCATION	ACTION
6-7 (cont'd)			Add J201 above the designation TB201. Change the terminal board to a receptacle. Add asterisk.
6-11	Orig.	Figure 6-4	Add designation J202 under E202. Add asterisk.

3. Make the following pen and ink corrections to correct clerical errors that exist in the manual. These corrections apply to Antenna Groups AN/SRA-17B and AN/SRA-17C.

PAGE NO.	CHANGE IN EFFECT	PARA & LINE, or FIG & LOCATION	ACTION
1-2	Orig.	Table 1-1	Change height of antenna to 125.
4-2	Orig.	Figure 4-3	Change value of R10 to 1.2 K.
4-3	Orig.	Figure 4-4	Change value of R10 to 1.2 K.
4-4	Orig.	Figure 4-5	Change output termination to K203-4.
5-6	Orig.	Figure 5-2	Change value of R10 to 1.2 K.
5-7	Orig.	Figure 5-3	Change value of R10 to 1.2 K.
5-8	Orig.	Figure 5-4	Change output termination to K203-4.
6-7	Orig.	Figure 6-2	Interchange colors white and red on DS1 and DS2, respectively. Add ground symbol to junction of C2 and C3. Change value of C3 to .22 UF. Indicate CR201 is a type 1N21B. Indicate the capacitor at the junction of R202 and CR201 is C207. Indicate the value of L201 is 20 MH and the value of C201 is .47 UF.

4. Destroy superseded pages after the complete manual has been checked against the "List of Effective Pages".

5. Make the appropriate entries on the correction page.

LIST OF EFFECTIVE PAGES			
PAGE NUMBER	CHANGE IN EFFECT	PAGE NUMBER	CHANGE IN EFFECT
Title Page	Change 1	3-0 to 3-3	Original
ii to iv	Original	4-0 to 4-4	Original
v to vii	Change 1	5-1 to 5-8	Original
1-0 to 1-1	Change 1	5-9 to 5-11	Original
1-2 to 1-3	Original	6-0 to 6-12	Original
2-0 to 2-2	Original	7-0 to 7-0A	Change 1
2-2A to 2-2B	Change 1	7-1 to 7-7	Original
2-3	Original	i-1 to i-2	Original

DEPARTMENT OF THE NAVY
BUREAU OF SHIPS
WASHINGTON 25, D. C.

IN REPLY REFER TO
Code 242-100

From: Chief, Bureau of Ships
To: All Activities concerned with the Installation, Operation, and Maintenance of the Subject Equipment

Subj: Technical Manual for Antenna Group AN/SRA-17B, NAVSHIPS 94127

1. This is the Technical Manual for the subject equipment and is in effect upon receipt.

2. When superseded by a later edition, this publication shall be destroyed.

3. Extracts from this publication may be made to facilitate the preparation of other Department of Defense publications.

4. Errors found in this publication (other than obvious typographical errors), which have not been corrected by means of Temporary Corrections or Permanent Changes should be reported. Such report should include the complete title of the publication and the publication number (short title); identify the page and line or figure and location of the error; and be forwarded to the Publications Section of the Bureau of Ships.

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R. K. JAMES
Chief of Bureau

RECORD OF CORRECTIONS MADE

CHANGE NO.	DATE	FIELD CHANGE NO.	SIGNATURE

TABLE OF CONTENTS

SECTION 1 - GENERAL INFORMATION

Paragraph		Page
1-1.	Functional Description	1-1
1-2.	Factory Changes	1-1
1-3.	Quick Reference Data	1-1
1-4.	Equipment Lists	1-1

SECTION 2 - INSTALLATION

2-1.	Unpacking the Equipment	2-0
2-2.	Power Requirements and Distribution	2-0
2-3.	Installation Layout	2-0
2-4.	Installation Procedures for Antenna Group AN/SRA-17B	2-0
2-5.	Inspection and Adjustments	2-1
2-6.	Installation Procedures for Antenna Group AN/SRA-17C	2-2B

SECTION 3 - OPERATOR'S SECTION

3-1.	Functional Operation	3-0
3-2.	Description of Controls and Indicators	3-0
3-3.	Operating Procedures	3-0
	a. Starting Procedure	3-0
	b. Tuning Procedure	3-0
	c. Stopping Procedure	3-0
3-4.	Operator's Maintenance	3-0
	a. Operating Checks	3-0
	b. Operator's Maintenance	3-2

SECTION 4 - PRINCIPLES OF OPERATION

4-1.	Overall Functional Description.	4-0
4-2.	Power Supply	4-0
4-3.	Switching Circuits	4-0
4-4.	Antenna Tuning Circuits	4-1
4-5.	Noise Source	4-4

SECTION 5 - TROUBLE-SHOOTING

Paragraph		Page
5-1.	General	5-0
5-2.	Test Equipment and Special Tools	5-0
5-3.	Overall Trouble-Shooting	5-0
5-4.	Power Circuits, Functional Section Trouble-Shooting	5-3
5-5.	Switching Circuits, Functional Section Trouble-Shooting	5-3
5-6.	Antenna Tuning Circuits, Functional Section Trouble-Shooting	5-4
5-7.	Noise Source, Functional Section Trouble-Shooting	5-7
5-8.	Typical Troubles	5-8

SECTION 6 - SERVICE AND REPAIR

6-1.	Failure Report	6-0
6-2.	Introduction	6-0
6-3.	Preventive Maintenance	6-0
6-4.	Maintenance Standards	6-1
6-5.	Introduction	6-1
6-6.	Tests for Establishing Reference Standards	6-2
6-7.	Preventive Maintenance Check-Off	6-3
6-8.	Repair	6-6
6-9.	General	6-6

SECTION 7A - SUPPLEMENTARY PARTS LIST

SECTION 7 - PARTS LIST

7-1.	Introduction	7-1
7-2.	Maintenance Parts List	7-1
7-3.	Stock Number Identification.	7-1
7-4.	List of Manufacturers.	7-1
7-5.	Notes	7-1

LIST OF ILLUSTRATIONS

SECTION 1 - GENERAL INFORMATION

Figure		Page
1-1.	Antenna Group AN/SRA-17B, Relationship of Units	1-0
1-2.	Antenna Group AN/SRA-17C, Relationship of Units	1-0

SECTION 2 - INSTALLATION

2-1.	Antenna Group AN/SRA-17B, Outline Drawing	2-2
2-1A.	Antenna Group AN/SRA-17C, Outline Drawing	2-2A
2-2.	Coaxial Cable Termination for an AN/SRR-11 Receiver	2-3

SECTION 3 - OPERATOR'S SECTION

3-1.	Antenna Control Unit, Control and Indicator Locations	3-1
3-2.	Antenna Control Unit, Tube and Fuse Locations	3-3

SECTION 4 - PRINCIPLES OF OPERATION

4-1.	Antenna Group, Overall Functional Block Diagram	4-0
4-2.	Power Supply, Simplified Schematic Diagram	4-1
4-3.	Switching Circuits, Simplified Schematic Diagram	4-2
4-4.	Antenna Tuning Circuits, Simplified Schematic Diagram	4-3
4-5.	Noise Source, Simplified Schematic Diagram	4-4

SECTION 5 - TROUBLE-SHOOTING

Figure		Page
5-1.	Power Circuits, Service Schematic Diagram	5-6
5-2.	Switching Circuits, Service Schematic Diagram	5-6
5-3.	Antenna Tuning Circuits, Service Schematic Diagram	5-7
5-4.	Noise Source, Service Schematic Diagram	5-8
5-5.	Antenna Control Unit, Location of Parts	5-8
5-6.	Radio Frequency Tuner TN-334A/SRA-17A, Location of Parts	5-9
5-6A.	Radio Frequency Tuner TN-418/SRA-17C, Location of Parts	5-10
5-7.	Antenna, Location of Parts	5-10
5-8.	Antenna Group, Primary Power Distribution, Schematic Diagram	5-11
5-9.	Antenna Control Unit, Voltage and Resistance Diagram	5-11

SECTION 6 - SERVICE AND REPAIR

6-1.	Antenna Group, Block Diagram for Maintenance Standards Tests	6-2
6-2.	Antenna Group AN/SRA-17B, Schematic Diagram	6-7
6-3.	Antenna Control Unit, Wiring Diagram	6-9
6-4.	Radio Frequency Tuner, Wiring Diagram	6-11

LIST OF TABLES

SECTION 1 - GENERAL INFORMATION

Table Page

1-1. Antenna Group AN/SRA-17B, Equipment Supplied 1-2
1-2. Antenna Group AN/SRA-17B, Equipment Required but Not Supplied 1-2
1-3. Antenna Group AN/SRA-17B, Shipping Data 1-3
1-4. Antenna Group AN/SRA-17B, Electron Tube Complement . . 1-3
1-5. Antenna Group AN/SRA-17B, Semi-conductor Diode Complement 1-3

SECTION 3 - OPERATOR'S SECTION

3-1. Controls and Indicators 3-2

SECTION 5 - TROUBLE-SHOOTING

5-1. Antenna Group, System Trouble-Shooting Chart 5-1
5-2. Power, Circuits, Functional Section Trouble-Shooting Chart . . 5-2
5-3. Switching Circuits, Functional Section Trouble-Shooting Chart . 5-4
5-4. Antenna Tuning Circuits, Functional Section Trouble-Shooting Chart 5-5

SECTION 6 - SERVICE AND REPAIR

6-1. Estimated Time Required to Perform POMSEE 6-1
6-2. List of Maintenance Standards Procedures 6-2

SECTION 7A - SUPPLEMENTARY PARTS LIST

7-1A. Antenna Group AN/SRA-17C, Maintenance Parts List 7-0

SECTION 7 - PARTS LIST

7-1. Antenna Group AN/SRA-17B Maintenance Parts List 7-2
7-2. Antenna Group AN/SRA-17B, List of Manufacturers 7-7

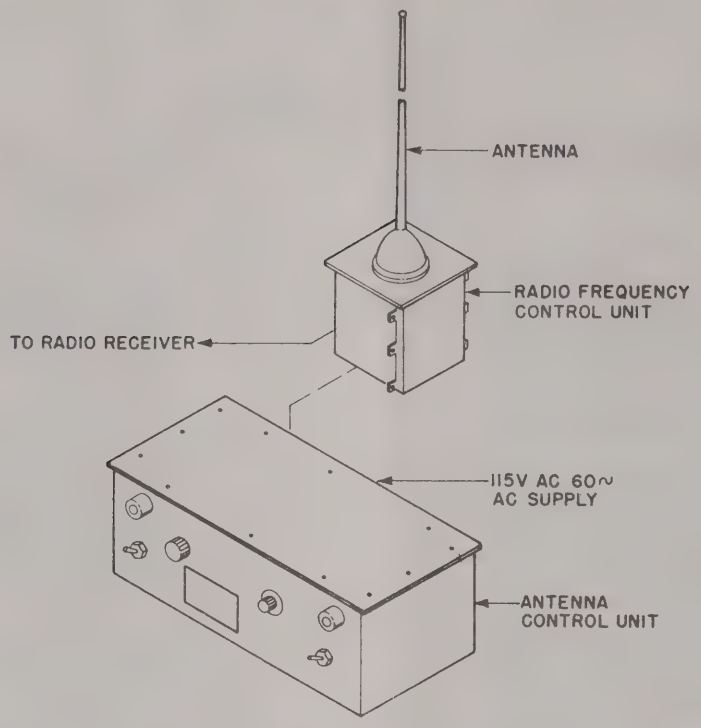


Figure 1-1. Antenna Group AN/SRA-17B, Relationship of Units

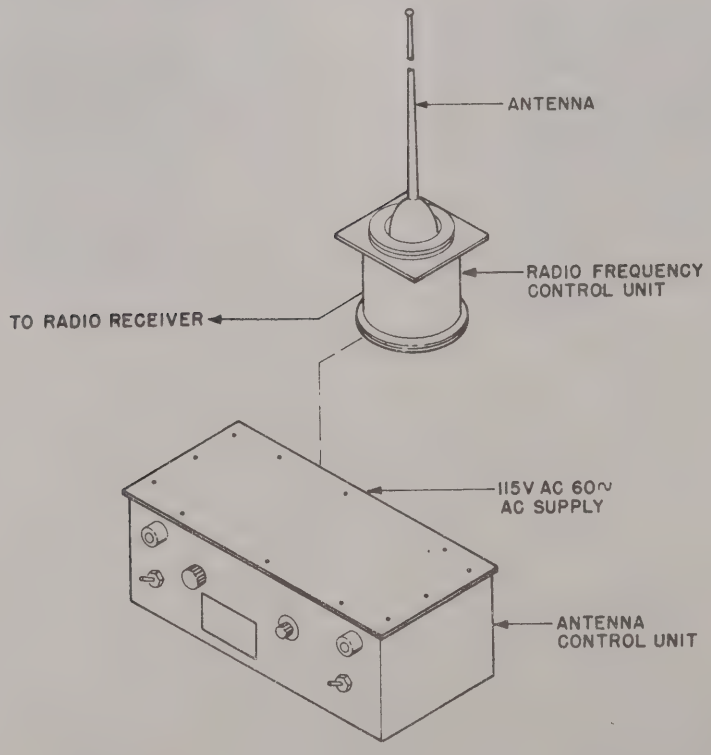


Figure 1-2. Antenna Group AN/SRA-17C, Relationship of Units

SECTION I

GENERAL INFORMATION

NOTE

Unless otherwise indicated, all references to Antenna Group AN/SRA-17B apply equally to Antenna Group AN/SRA-17C.

1-1. FUNCTIONAL DESCRIPTION.

Antenna Group AN/SRA-17B is a physically small but efficient receiving antenna system used on either small craft where space for a long-wire antenna is not available or larger craft on which large, closely spaced antenna interact. Although the antenna group was designed for operation with an AN/SRR-11 or RBA Radio Receiver, it may be used with any radio receiver tunable over the VLF-LF frequency spectrum. Antenna Group AN/SRA-17B consists of Antenna AT-924A/SR, Radio Frequency Tuner TN-334A/SRA-17A and Antenna Control Unit C-2536B/SRA-17. Antenna Group AN/SRA-17C consists of Antenna AT-924B/SR, Radio Frequency Tuner TN-418/SRA-17C and Antenna Control Unit C-6193/SRA-17C.

a. The antenna consists of a stainless steel, tubular, whip-type probe and steel mounting, which is at the top of the radio frequency tuner. Although the antenna is fixed in length, it is tunable over the 14 to 600 kc frequency range.

b. The radio frequency tuner consists of a single chassis which mounts within the radio frequency tuner housing. The chassis mounts four functional tuning circuits which tune the antenna to the frequency required by the associate radio receiver. Since the antenna group has no calibrated dial, a noise source, physically located within the radio frequency tuner, is provided as a tuning aid. When tuning, the noise source is substituted for the received radio frequency signals. The noise permits the antenna and associate radio receiver to peak at the desired frequency.

c. The antenna control unit is the control center of the antenna group. All operating controls are mounted on the front panel of the unit. The antenna control unit contains a power supply which energizes the selected antenna tuning circuit, the noise source, and relays of the radio frequency tuner.

1-2. FACTORY CHANGES.

The following factory chnages have been made on the equipment:

a. Variable inductors, L201 and L202, have been replaced by a single part, L201.

b. Capacitor C202 has been removed from the present equipment.

c. The values of capacitors C203 and C204 have been changed.

d. The value of R1 has been changed in Antenna Group AN/SRA-17C.

e. J201 and J202 replace TB201 and E202, respectively, in Antenna Group AN/SRA-17C.

1-3. QUICK REFERENCE DATA.

a. Frequency range: 14 kc to 600 kc.

b. Number of preset frequencies: four channels (14 to 38 kc, 38 to 95 kc, 95 to 235 kc, and 235 to 600 kc).

c. Type of tuning: saturable reactor.

d. R. F. Tuner output impedance: 72 ohms.

e. Power requirements: 115 volts, 60 cps, single phase.

1-4. EQUIPMENT LISTS.

a. EQUIPMENT SUPPLIED. - Table 1-1 lists the equipment supplied.

b. EQUIPMENT REQUIRED BUT NOT SUPPLIED. - Table 1-2 lists the equipment required but not supplied.

c. SHIPPING DATA. - Table 1-3 lists shipping data for the equipment.

d. ELECTRON TUBE COMPLEMENT. - Table 1-4 lists the electron tubes used in the equipment.

e. SEMI-CONDUCTOR DIODE COMPLEMENT. - Table 1-5 lists the semi-conductor diodes used in the equipment

TABLE 1-1. ANTENNA GROUP AN/SRA-17B, EQUIPMENT SUPPLIED

QUANT. PER NAME	NOMENCLATURE		*OVERALL DIMENSIONS				
	NAME	DESIGNATION	HEIGHT	WIDTH	DEPTH	*VOLUME	*WEIGHT
1	Antenna	AT-924A/SR	131-1/2				5-1/2
1	Radio Frequency Tuner	TN-334A/SRA-17A	9-1/2	12	12	.79	20
1	Antenna Control Unit	C-2536B/SRA-17	4-1/2	14	10-5/16	.38	16
2	Instruction Book	SHIPS 94127					

*Dimensions are in inches, volume in cubic feet, weight in pounds.

TABLE 1-2. ANTENNA GROUP AN/SRA-17B, EQUIPMENT REQUIRED BUT NOT SUPPLIED

QUANT. PER EQUIP.	NOMENCLATURE		REQUIRED USE	REQUIRED CHARACTERISTICS
	NAME	DESIGNATION		
As req.	Stuffing Tubes	None	For coaxial and control cables.	For cable entrance to radio frequency tuner.
1	Cable	RG-12A/U	Connect radio frequency tuner to radio receiver.	Coaxial
1	Cable	None	Connect antenna control unit to 115-vac power source.	2-wire, No. 12 gage or heavier.
1	Cable	None	Connect antenna control unit to radio frequency tuner.	11 conductor, shielded.
1	Connector	AN3106B-24-20P	Terminate control cable at antenna control unit.	
1	Connector	AN3106B-14S-7S	Terminate power cable at antenna control unit.	
1	Connector	Navy Type 49121	Terminate coaxial cable at RBA receiver.	
1	Connector	Type M.	Terminate coaxial cable at AN/SRR-11 receiver.	
11	Terminal Lugs	MS25036-1	Terminate control cable at radio frequency tuner.	
1	Multimeter (vtvm)	ME-26/U	Voltage and resistance measurements.	0 to 300 volts rms, 0.2 ohm to 500 megohms.

TABLE 1-3. ANTENNA GROUP AN/SRA-17B, SHIPPING DATA

BOX NO.	NOMENCLATURE		*OVERALL DIMENSIONS				
	NAME	DESIGNATION	HEIGHT	WIDTH	DEPTH	*VOLUME	*WEIGHT
1	Antenna Control	C-2536/SRA-17	6-5/8	16-5/8	14	.89	18
2	Radio Frequency Tuner	TN-334/SRA-17	17-1/4	13	13-1/4	1.72	26
3	Antenna	AT-924A/SR	133	1-1/2dia			6-1/2

*Dimensions are in inches, volume in cubic feet, and weight in pounds; equipment packed and ready for shipment.

TABLE 1-4. ANTENNA GROUP AN/SRA-17B, ELECTRON TUBE COMPLEMENT

UNIT	NUMBER OF TUBES OF TYPES INDICATED		
	5Y3WGTA	OB2WA	TOTAL
Antenna Control C-2536B/SRA-17	1	1	2

TABLE 1-5. ANTENNA GROUP AN/SRA-17, SEMICONDUCTOR DIODE COMPLEMENT

UNIT	NUMBER OF DIODES OF TYPES INDICATED	
	IN21B	TOTAL
Radio Frequency Tuner TN-334/SRA/17	1	1

SECTION 2

INSTALLATION

2-1. UNPACKING THE EQUIPMENT.

CAUTION

Antenna Group AN/SRA-17B is supplied with all chassis and tubes in place. The equipment must be handled with care to avoid. mechanical shock, which might cause component damage.

a. GENERAL. - The antenna group is packed for domestic shipment in two separate cartons and a single shipping tube. When the equipment is received, select a convenient location where the units may be unpacked without exposure to the elements. Open the cartons and slit the top of the water-vapor proof barrier bag evenly, along the entire length of the bag. Be careful not to penetrate more than one inch the barrier to avoid damaging the equipment.

b. MECHANICAL CHECK. - Inspect the equipment for possible damage incurred during shipment.

(1) After unpacking, place the antenna control unit and the radio frequency tuner on a work bench. Check to see that the tubes and tube shield of the antenna control unit are well seated. Check to see that no foreign particles are lodged within the equipment. Tighten screws and nuts which may have worked loose during shipment. Carefully check the wiring of the chassis for loose or broken connections.

(2) Inspect the operation of the front panel controls by rotating them throughout the control range. Make certain there is no evidence of abnormal operation.

2-2. POWER REQUIREMENTS AND DISTRIBUTION.

The antenna group requires operating power of 115 volts, 60 cycles single phase. Primary power is applied only to the antenna control unit but is distributed as indicated in figure 5-8.

2-3. INSTALLATION LAYOUT.

a. For optimum performance, the antenna and the radio frequency tuner must be mounted as high as possible at the top of a mast, king post, stack or other vertical member of the superstructure. Since the cable run between the radio frequency tuner and the radio receiver is critical site the tuner as close as possible, along the horizontal axis, to the radio room. (See figure 1-1.) When locating the antenna and radio frequency tuner, make certain that the selected site will permit:

(1) Vertical mounting of the antenna.

(2) Access to the front of the radio frequency tuner for maintenance purposes.

(3) Clearance from other antennas which might interfere with the antenna group.

(4) Clearance either on the right side or the left side of the radio frequency tuner so that the cable runs will be unobstructed.

b. The antenna control unit is located in the radio room directly above the radio receiver with which the antenna group is to be used. Make certain that a source of 115 volt ships power is accessible to the unit.

2-4. INSTALLATION PROCEDURES.

After moving the equipment to the selected sites, perform the installation procedures described in the following steps:

Step 1. Remove the six bolts that secure the front cover of the radio frequency housing. Remove the front cover.

Step 2. Cut two holes in the housing of the radio frequency tuner housing as indicated in figure 2-1. The holes may be cut either on the right or the left side of the housing depending on the relation between the radio frequency tuner and the mounting structure. The holes must be located no higher than two and a half inches from the bottom of the housing. The diameter of the holes is dependent on the size of the stuffing tubes.

CAUTION

Before cutting, make certain that the tuner chassis is above the spots selected for the holes.

Step 3. Insert one end of the control cable through a stuffing tube and into the designated hole cut in the radio frequency tuner housing. (See figure 2-1.) Terminate each of the 11 conductors of the cable with a crimp style terminal lug (MS25036-1). Connect the conductors to terminals A through L of terminal board TB201 located on the tuner chassis. (See figure 2-1.)

NOTE

Identify each conductor and the corresponding terminal so that the appropriate terminations can be made at the antenna control unit.

Step 4. Insert one end of the coaxial cable (RG-12A/U) through a stuffing tube and into the designated hole cut in the radio frequency tuner housing. (See figure 2-1.) Solder the coaxial cable to the solder lug on insulator E202 located on the tuner chassis.

Step 5. Mount the radio frequency tuner by welding the steel plate in a vertical position on the selected site of the superstructure. The mounting area must be sufficiently large to accommodate the 12 inch steel plate. At least two sides of the plate must be welded to the superstructure.

NOTE

Although the equipment was designed for a 100 foot cable run between the radio receiver and the radio frequency tuner, satisfactory performance will be attained with lengths up to 300 feet. It is recommended, however, that the cable runs be limited to 150 feet.

Step 6. Mount the antenna to the radio frequency tuner housing using the six nuts and bolts secured to the top of the tuner housing. Connect the antenna lead to insulator E201 located on the tuner chassis.

Step 7. Secure the front cover of the radio frequency tuner housing. Run the coaxial and control cables to the receiver location in the radio room.

Step 8. Place the antenna control unit on a flat surface above the radio receiver. Make certain that it is in a protected area and that at least a two inch clearance is provided at the sides and top of the unit. Provide a "lip" around the unit to prevent its sliding off the flat surface.

Step 9. When the associate receiver is an RBA, terminate the coaxial cable with a NAVY TYPE 49121 connector for R9-11/U cable and with a TYPE N connector for an AN/SRR-11 receiver (figure 2-2). Connect the coaxial cable to the radio receiver.

Step 10. Terminate the control cable with an AN3106B-24-20P. Make certain that cable conductors A through L correspond with those identified in step 3. Connect the control cable to connector J1 on the antenna control unit.

Step 11. Prepare the required length of power cable. Terminate one end with an AN3106B-14S-7S connector. Connect the power cable to jack J2 on the antenna control unit (figure 2-1). Terminate the other end of the cable at the ships power. Make certain that the POWER switch on the front panel of the antenna control unit is at OFF.

2-5. INSPECTION AND ADJUSTMENTS.

There are no checks or adjustments required other than those described in the operator's section.

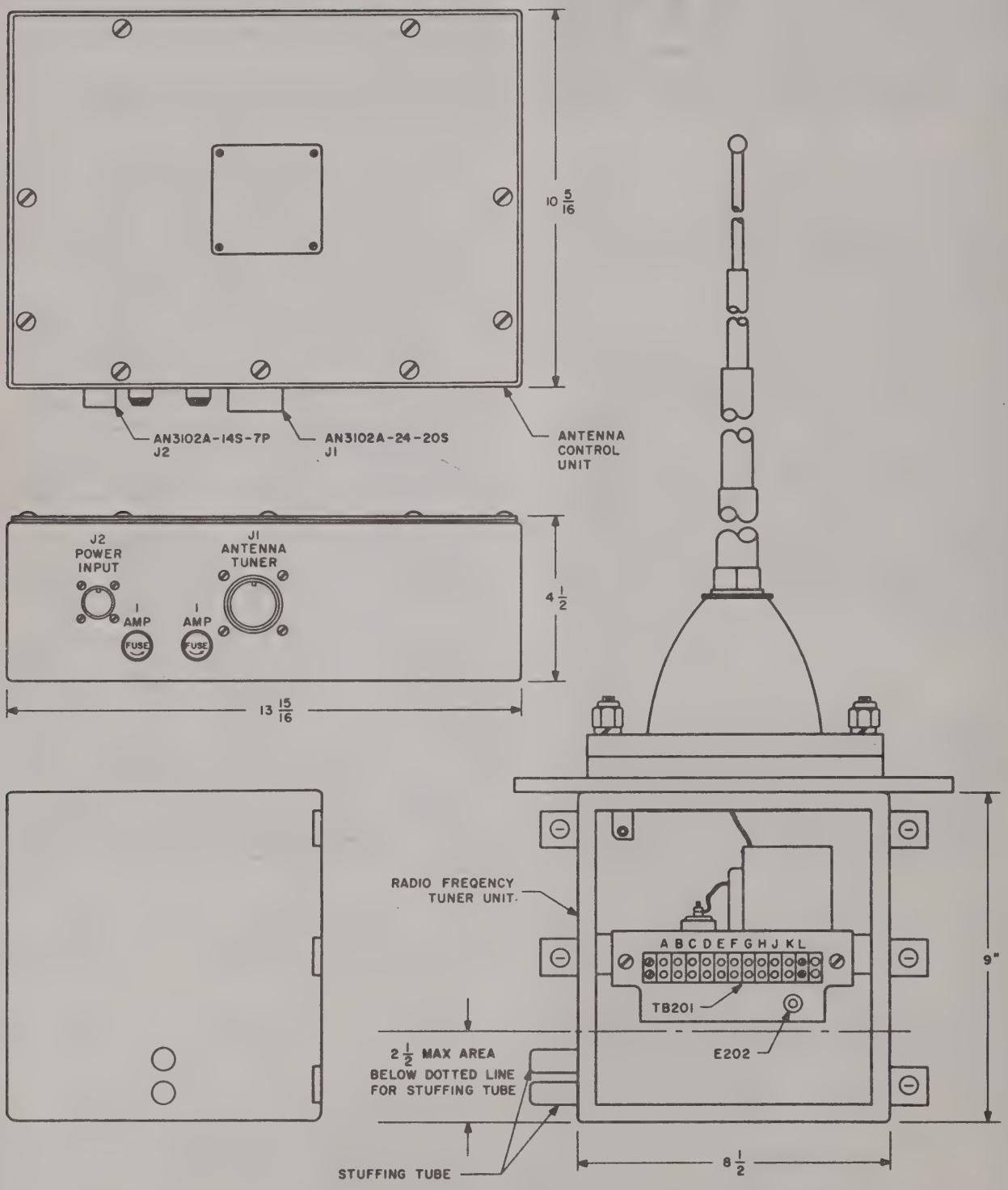


Figure 2-1. Antenna Group AN/SRA-17B, Outline Drawing

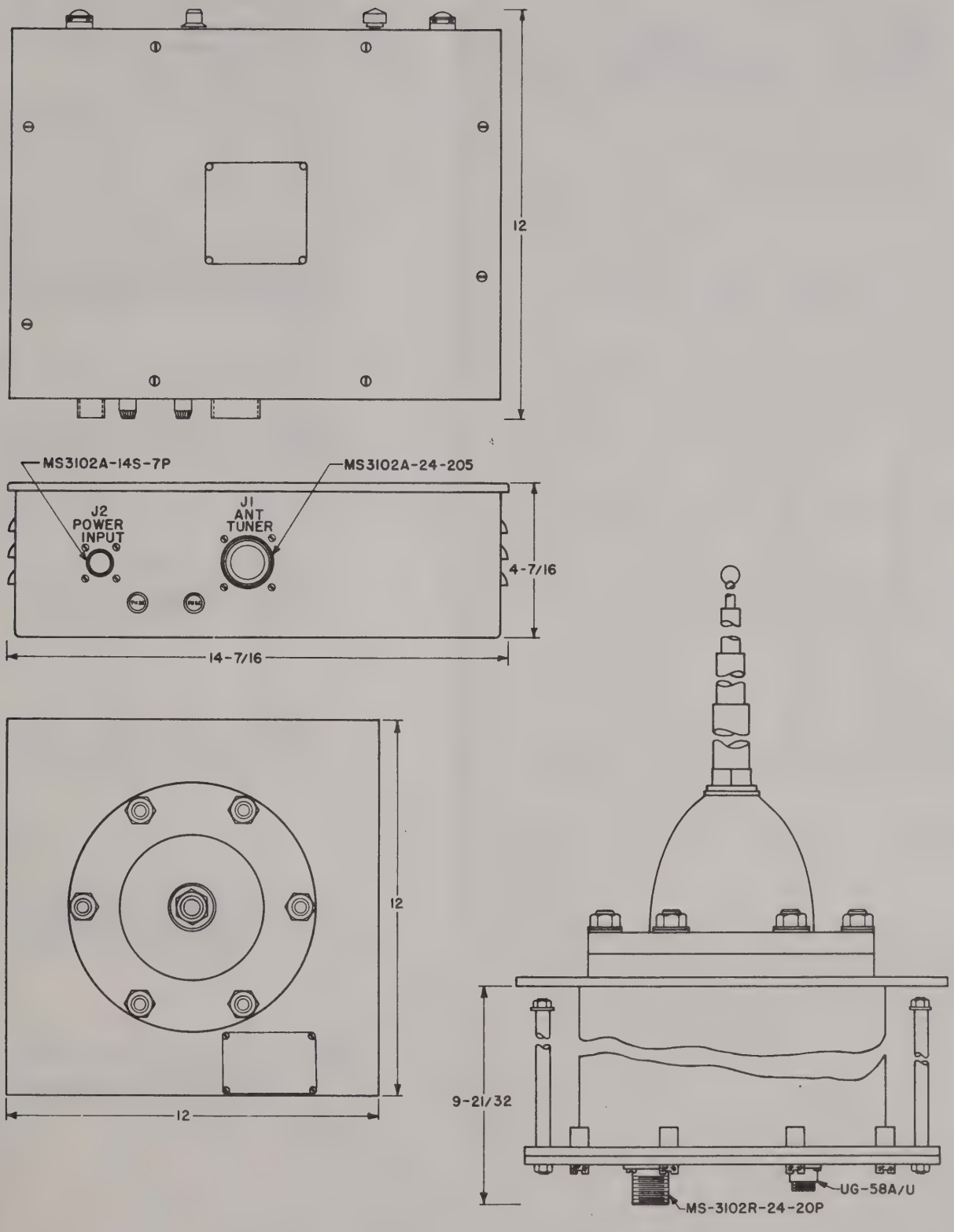


Figure 2-1A. Antenna Group AN/SRA-17C, Outline Drawing

2-6. INSTALLATION PROCEDURES FOR ANTENNA GROUP AN/SRA-17C.

After moving the equipment to the selected sites, perform the installation procedures described in the following steps. (See figure 2-1A.)

Step 1. Mount the radio frequency tuner as described in step 5 of paragraph 2-4.

Step 2. Mount the antenna to the radio frequency tuner housing using the six nuts and bolts secured to the top of the tuner housing. Tie a 0.040 inch diameter, corrosion-resistant steel lockwire between the hex at the base of the antenna and the hex at the top of the adapter.

Step 3. Connect the antenna lead to insulator E201 located on the tuner chassis.

Step 4. Terminate the required length of coaxial cable (RG-12A/U) at P202 (UG-941B/U). Mate plug P202 with receptacle J202 at the radio frequency tuner.

NOTE

Although the equipment was designed for a 100 foot cable run between the radio receiver and the radio frequency tuner, satisfactory performance will be attained with lengths up to 300 feet. It is recommended, however, that the cable runs be limited to 150 feet.

Step 5. Terminate the required length of 11 conductor shielded cable to plug P201 (MS3108R-24-20S). Mate plug P201 with receptacle J201 of the radio frequency tuner.

Step 6. Run the coaxial and control cables to the receiver location in the radio room.

Step 7. Install the antenna control unit as described in step 8 of paragraph 2-4.

Step 8. Terminate the radio frequency tuner with the associate receiver as described in step 9 of paragraph 2-4.

Step 9. Terminate the control cable at plug P1 (MS3106A-24-20P). Mate plug P1 with receptacle J1 of the antenna control unit.

Step 10. Terminate the required length of power cable with plug P2 (MS3106A-14S-7S). Mate plug P2 with receptacle J2. Terminate the other end of the power cable at the ships power. Make certain that the POWER switch on the front panel of the antenna control unit is at OFF.

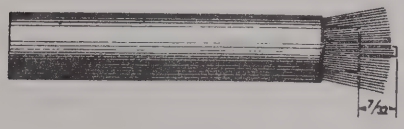
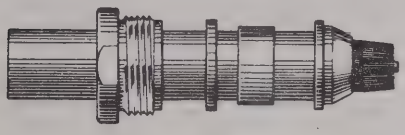
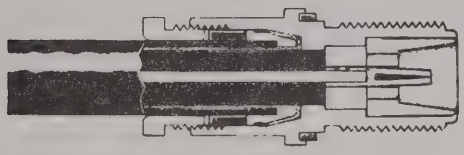
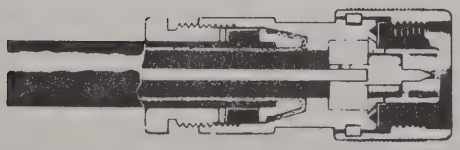
	Remove 9/16" of vinyl jacket. When using double shielded cable, remove 5/8".
	Comb out copper braid as shown. Cut off dielectric 7/32" from end. Tin center conductor.
	Taper braid as shown. Slide nut, washer and gasket over vinyl jacket. Slide clamp over braid with internal shoulder of clamp flush against end of vinyl jacket. When assembling connectors with gland, be sure knife-edge is toward end of cable and groove in gasket is toward the gland.
	Smooth braid back over clamp and trim. Soft solder contact to center conductor. Avoid use of excessive heat and solder. See that end of dielectric is clean. Contact must be flush against dielectric. Outside of contact must be free of solder.
 	Slide body into place carefully so that contact enters hole in insulator. Face of dielectric must be flush against insulator. Slide completed assembly into body by pushing nut. When nut is in place, tighten with wrenches. In connectors with gland, knife-edge should cut gasket in half by tightening sufficiently.

Figure 2-2. Coaxial Cable Termination for an AN/SRR-11 Receiver

SECTION 3

OPERATOR'S SECTION

3-1. FUNCTIONAL OPERATION.

Radio signal voltages on the ship's mast or superstructure are sampled by the probe, resonated by the tuner and applied to the associate radio receiver. By means of tuning circuits, the antenna probe may be tuned in four bands within the frequency range of 14 to 600 kc. The probe is mounted as high as possible on the ship's mast or superstructure so that it will be close to the maximum voltage on the actual antenna. A noise source may be substituted for the probe to provide accurate tuning since the antenna group does not have a frequency-calibrated dial. Operation is maintained at the antenna control unit which selects the tuning band, and either the probe or the noise source as input signal.

3-2. DESCRIPTION OF CONTROLS AND INDICATORS.

Figure 3-1 illustrates the controls and indicators of the equipment. The function of the controls and indicators are listed in table 3-1. Note that all operating controls are mounted on the front panel of the antenna control unit.

3-3. OPERATING PROCEDURES.

a. STARTING PROCEDURE. - To start the equipment, proceed as follows:

Step 1. Turn the POWER switch to ON. Check that the POWER light indicates.

NOTE

The intensity of the POWER light may be varied by rotating the front assembly of the indicator.

Step 2. Energize the radio receiver in accordance with the instructions issued with the radio equipment. Tune the receiver to the desired frequency and adjust the receiver gain control to maximum.

b. TUNING PROCEDURE. - To tune the antenna, proceed as follows:

Step 1. Turn the RANGE IN KC switch to the frequency range that corresponds to the selected radio frequency.

Step 2. Turn the NOISE GEN switch to ON. Check that the NOISE GEN light indicates.

NOTE

The intensity of the NOISE GEN light may be varied by rotating the front assembly of the indicator.

Step 3. Tune the INCREASE FREQUENCY control for maximum noise at the receiver input. Decrease the receiver gain if the noise level exceeds 20 db.

NOTE

The INCREASE FREQUENCY control should be used in conjunction with the antenna compensator of the receiver. Each control should be peaked alternately. If the associate receiver is an RBA, adjust the INCREASE FREQUENCY control and the antenna compensator for each coupling position.

Step 4. When the antenna has been properly tuned, turn the NOISE GEN switch to OFF.

Step 5. With the antenna supplying the input signal, rock the INCREASE FREQUENCY control about the setting obtained in step 3. This will provide the final peak adjustment. At this setting, the radio receiver should be peaked within one db.

c. STOPPING PROCEDURE. - To turn off the equipment, turn the POWER switch to OFF.

3-4, OPERATOR'S MAINTENANCE.

a. OPERATING CHECKS. - The following procedure can be used to provide a rough measurement of the receiver sensitivity. However, if the sensitivity of the system falls below the acceptance value, do not assume the trouble is within the antenna group. The trouble may be within the radio receiver.

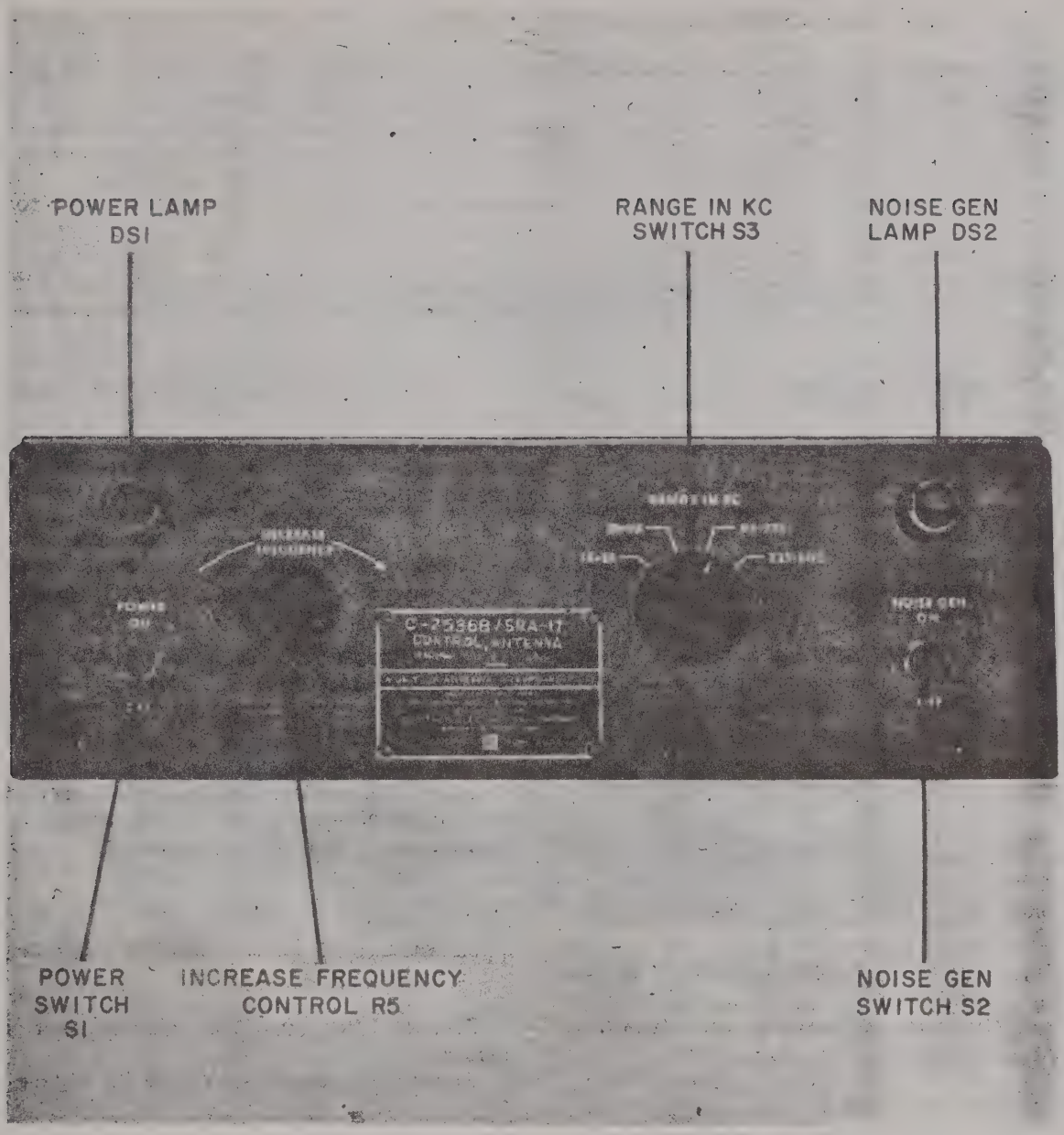


Figure 3-1. Antenna Control Unit, Control and Indicator Locations

Step 1. Perform the starting procedure given in paragraph 3-3.

Step 2. Perform steps 1, 2, and 3 of the tuning procedure given in paragraph 3-3.

Step 3. Rotate the INCREASE FREQUENCY control fully counterclockwise.

NOTE

With no noise input, a check of the receiver noise can be made.

Step 4. Reduce the receiver gain to produce a 0 db receiver noise level.

Step 5. Repeak the INCREASE FREQUENCY control. Record the receiver noise level. The recorded value can be used to check the overall system performance. If the output of the receiver falls below 4 db of the following typical values, a check of receiver sensitivity is indicated. Typical values for the receiver and antenna group in good operating condition are as follows:

TABLE 3-1. CONTROLS AND INDICATORS

DESIGNATION	FUNCTION
POWER switch	Applies primary power to the equipment.
POWER light (red)	Indicates when primary power is applied to equipment.
NOISE GEN switch	At ON position, noise source is selected for signal input to radio. At OFF, antenna provides input signal.
NOISE GEN light (white)	Indicates when noise source provides input signal.
RANGE IN KC switch	Provides four bands to cover frequency range, as follows: 14 -38 KC 38 -95 KC 95 -235 KC 235 -600 KC
INCREASE FREQUENCY control	Provides fine tuning within the frequency band selected by the RANGE IN KC switch.

FREQUENCY (KC)	OUTPUT METER READING (ADD 20 DB SCALE)
25	-3 db
62	-1 db
155	-0 db
385	-0 db

b. OPERATOR'S MAINTENANCE. If the equipment is inoperative, or not operating properly, and the radio receiver is not defective, perform the following procedures:

NOTE

Operator's maintenance is restricted to the antenna control unit.

Step 1. If either the POWER light or the NOISE GEN light does not indicate when the appropriate switches are set to ON, replace the defective light.

Step 2. If neither light indicates, check that the top cover plate is securely in place. The equipment will not operate unless the cover plate is secure.

Step 3. If neither light indicates, check fuses F1 and F2 (figure 3-2). A replacement fuse is located below the top cover plate.

NOTE

If the replacement fuse blows, summon a radio technician.

Step 4. Check that the cable connection are secure.

Step 5. Replace tubes V1 and V2 (figure 3-2).

CAUTION

After replacing tube V1, do not replace the cover plate. Depress interlock switch S4 and energize the equipment. Observe tube V1. If it glows excessively, summon a radio technician. If it does not glow excessively, replace the top cover and return the equipment to operation.

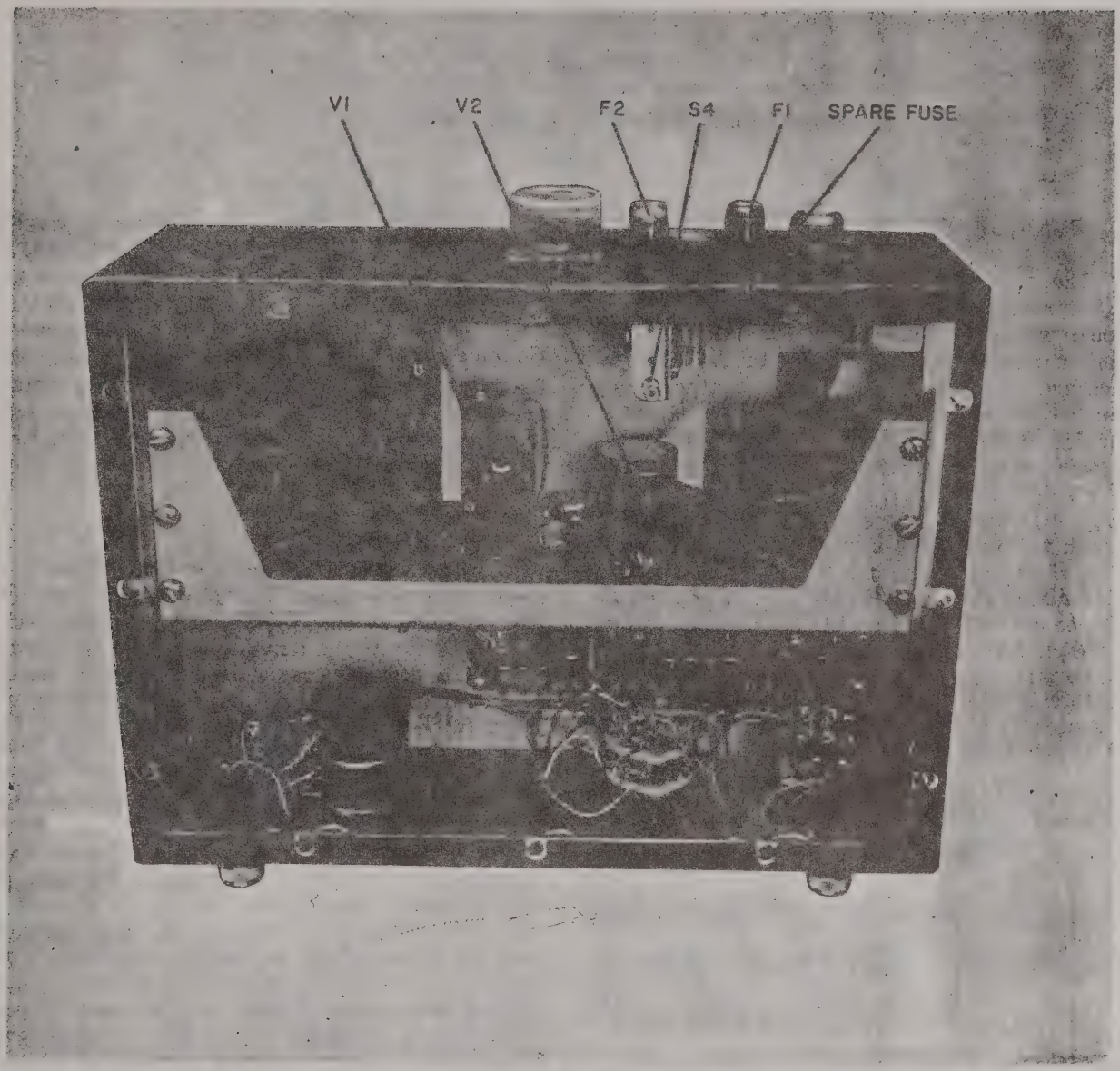


Figure 3-2. Antenna Control Unit, Tube and Fuse Locations

SECTION 4

PRINCIPLES OF OPERATION

4-1. OVERALL FUNCTIONAL DESCRIPTION

a. The antenna group consists of four functional circuits (figure 4-1) that tune the antenna through its operating range. The actual tuning is accomplished by the antenna tuning circuits which are tuned by the saturable reactor technique. Each of the four antenna tuning circuits provides antenna resonance within a separate segment of the 14 to 600 kc frequency range. For a select frequency, the appropriate antenna tuning circuits is energized by power applied through the switching circuits. Since the response of each tuning circuit is flat for the selected tuning range, the noise source is used to peak the antenna to a specific frequency within the frequency band covered by the selected tuning circuit.

b. During operation, power is applied through the switching circuits to the antenna tuning circuit corresponding to the frequency setting of the radio receiver. The tuning circuit is peaked to the selected frequency by the INCREASE FREQUENCY control using the noise source as an input and the receiver as an output meter. When the antenna tuning circuit has been peaked, the noise source is replaced by the antenna. Radio signals at the selected frequency, which are present in the vicinity of the antenna, are resonated by the selected tuning circuit and are fed to the radio receiver.

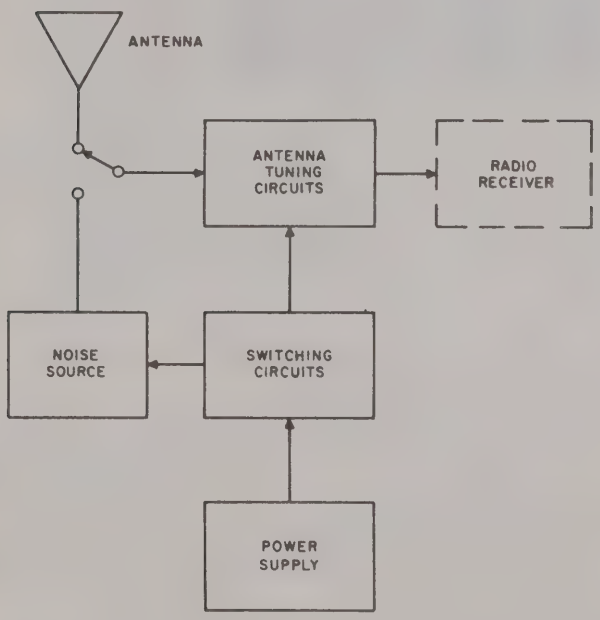


Figure 4-1. Antenna Group, Overall Functional Block Diagram.

4-2. POWER SUPPLY.

a. The power supply (figure 4-2) furnishes unregulated power output at 330 volts to operate the switching circuit relays, and regulated outputs of 105 volts and 92 volts to the noise source and tuning circuits, respectively. Single phase power is applied through step-up transformer T1 to full-wave rectifier V1. The output of V1 is filtered by coil L1 and capacitors C1A and C1B. The unregulated voltage is taken across bleeder resistor R2 and applied to the switching circuits through resistor R3. This resistor drops the unregulated voltage to the level necessary to drive the relays of the switching circuits.

b. The unregulated voltage is also applied through resistor RJ to voltage regulator V2. The regulated output is developed across resistors R4, R5A and R5B, and applied to the noise source through NOISE GEN switch S2. Power for the antenna tuning circuits is tapped off current control resistor R5A and applied to RANGE IN KC switch S3. Capacitor C3 provides an r-f bypass for the radio frequency signals appearing across the antenna tuning circuits. Interlock switches S4 and S201 provide interlock protection to the antenna control unit and the radio frequency tuner. These switches are closed when the cover plates of the respective units are secured.

4-3. SWITCHING CIRCUITS.

a. The switching circuits (figure 4-3) consist of NOISE GEN switch S2 and RANGE IN KC switch S3. These circuits switch power, as

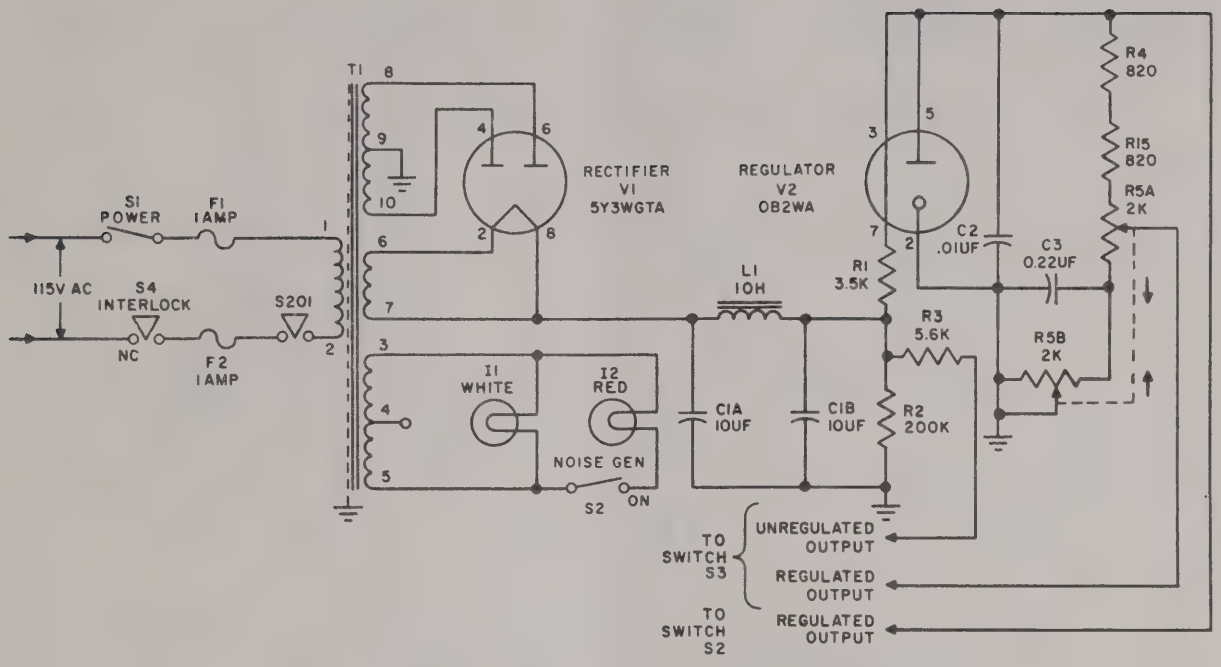


Figure 4-2. Power Supply, Simplified Schematic Diagram

required, to relays K201, K202, and K203 and select a resistor from the R10, R11, R12 and R13 resistor bank. (Resistors R10 through R13 are functionally part of the antenna tuning circuits. Refer to paragraph 4-4.)

b. Relay K203 is used to switch either the antenna or the noise source through the antenna tuning circuits to the radio receiver. With the NOISE GEN switch at OFF, relay K203 is de-energized, and the antenna is connected to the tuning circuits. With the NOISE GEN switch at ON, relay K203 is energized through all four positions of RANGE IN KC switch S3. The actual power is applied through deck A of switch S3, resistors R14 and R7 and the NOISE GEN switch.

c. Relays K201 and K202 select the antenna tuning circuit that corresponds to the selected frequency range. In the 14-38 kc range (switch position 1), both relays are de-energized; at 38-95 kc (switch position 2), relay K202 is energized; at 95-235 kc (switch position 3), relay K201 is energized; and at 235-600 kc (switch position 4), relays K201 and K202 are energized. Power is continually applied to the rotor of deck A: In switch position 1, the circuit is completed through resistors R14, R7 and R6; in position 2, the circuit is completed through resistor R8, relay K202 and resistor R6; in position 3, the circuit is completed through resistor R9, relay K201 and resistor R6; in position 4, the circuit is completed through relays K201 and K202 and resistor R6.

d. Resistors R6, R7, R8, R9 and R14 have a resistance of 10,000 ohms each, as have the coils of relays K201, K202 and K203. Note in figure 4-3 that regardless of which relays are energized, the unregulated voltage applied to the RANGE IN KC switch S3 is always terminated in 30,000 ohms. This arrangement maintains a constant 10 ma power supply drain for any selected frequency range.

4-4. ANTENNA TUNING CIRCUITS.

a. The antenna tuning circuits (figure 4-4) series tune the antenna from 14 to 600 kc. The tuning technique is that of a saturable inductor wherein the inductance of a variable inductor is altered to match a preselected frequency. Variable inductor L201 consists of two signal windings (coils 1 and 8, and 3 and 6) and a control winding (coil 4 and 5). The coils are wound over a special ferro-magnetic core material, and are separated by an electrostatic shield to prevent capacitive coupling. By varying the d-c current through the control winding, the permeability of the core material is correspondingly affected as is the inductance of the signal winding. By changing the inductance of a signal winding, resonance of r-f signals at a selected frequency is effected.

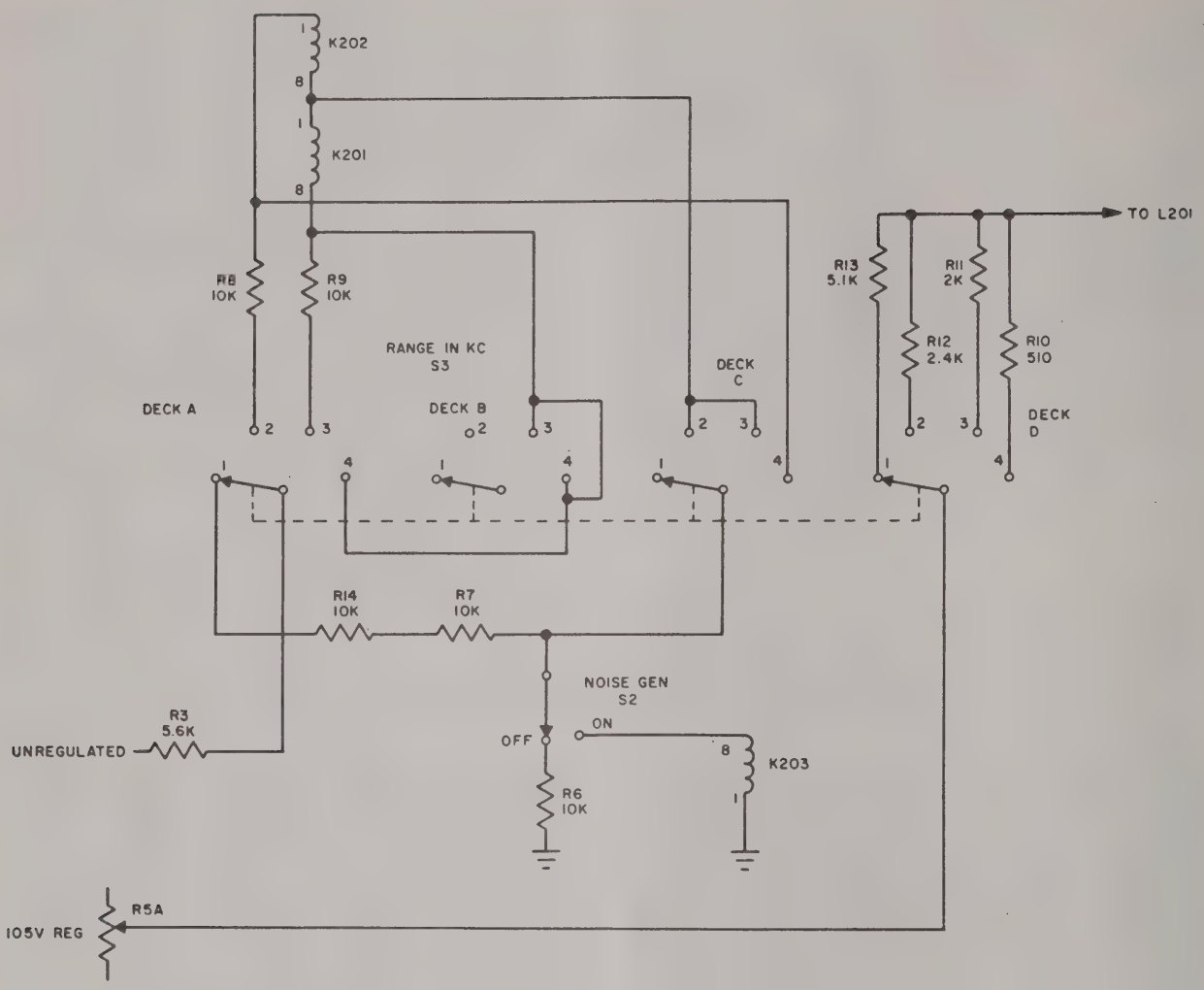


Figure 4-3. Switching Circuits, Simplified Schematic Diagram

b. Assume that the radio receiver has been tuned to 20 kc. The RANGE IN KC switch is set to position 1, which maintains relays K201 and K202 in the de-energized position. Since the selected frequency band is between 18 and 38 kc, the circuit within this band must be tuned to 20 kc. This tuning is accomplished by the INCREASE FREQUENCY control, ganged resistors R5A and R5B. As the control is rotated from the maximum counterclockwise position, current flow through current limiter R13 and the control winding of L201 increases. The increased current flow through the control winding proportionally decreases the inductance in signal winding 8-1, which tunes the antenna to a higher frequency. Shunt capacitor C205, which is connected from the antenna side of the signal winding to ground, increases the starting control current. Resistor R13 provides a bandspread effect for ease in tuning.

c. There are four functional tuning circuits, the components of which are selected by the switching circuits (paragraph 4-3). The components for each frequency band are as follows:

NOTE

No starting capacitor is required for the 235 - 600 kc band.

BAND	CONDITIONS	SIGNAL WINDING	STARTING CAPACITOR	CURRENT LIMITER
14-38kc	K201, K202 de-energized	8-1	C205	R13
38-95kc	K202 energized	8-1	C204	R12
95-235kc	K201 energized	3-6	C203	R11
235-600kc	K201, K202	3-6		R10

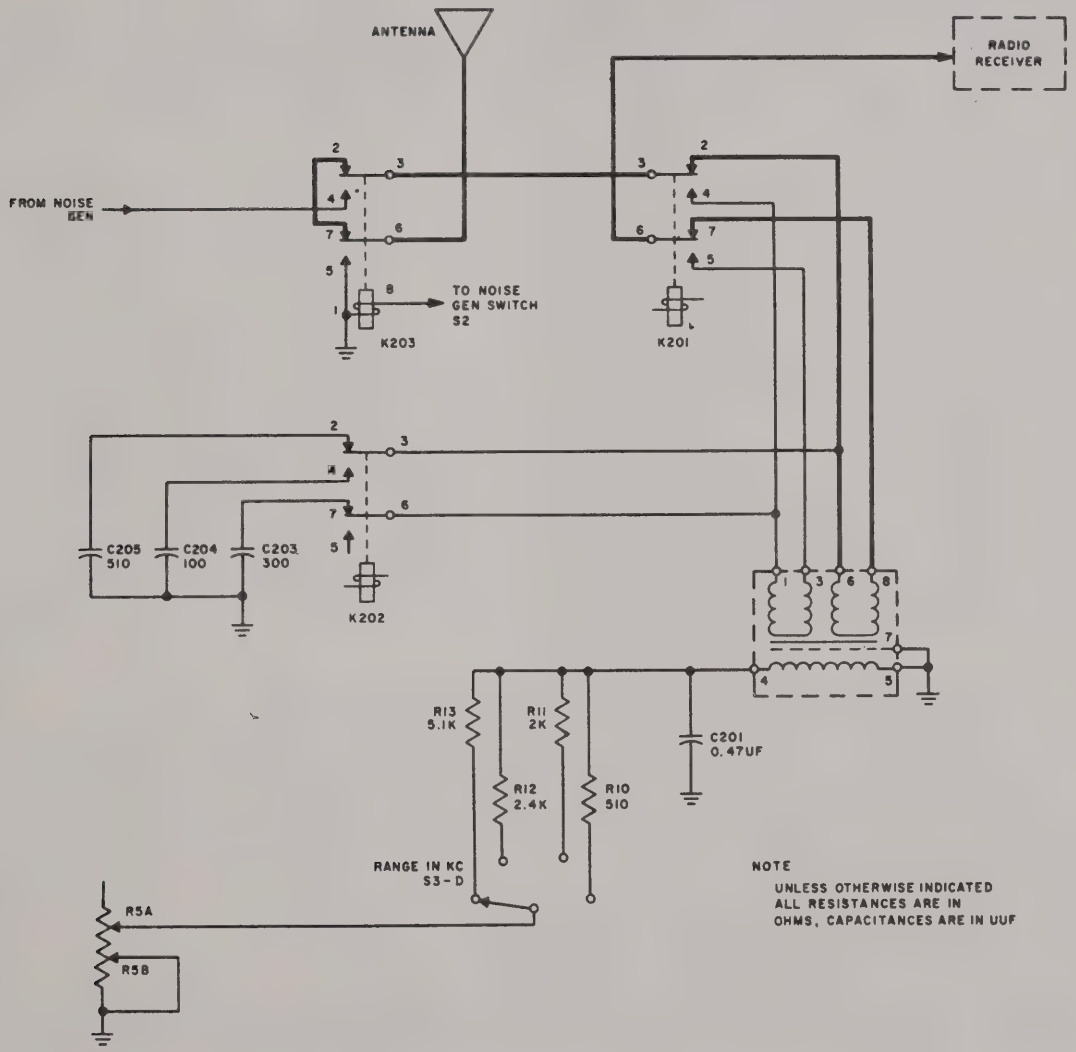


Figure 4-4. Antenna Tuning Circuits, Simplified Schematic Diagram

4-5. NOISE SOURCE.

a. The noise source (figure 4-5) permits the tuning of the antenna to a specific frequency quickly and accurately and without the aid of a frequency calibrated dial. As auxiliary functions, the noise source may also be used in the maintenance of the antenna control group, and to provide a sensitivity check of the associated radio receiver.

b. Noise is generated by a silicon diode, which exhibits an r-f noise generating property when reverse current is applied.

c. When NOISE GEN switch S2 is placed at ON, a regulated voltage (paragraph 4-2) is applied to resistor R202. The generated noise is developed across resistor R201 and coupled to the tuning circuits through relay K203 in the energized condition.

d. Since a silicon diode is sensitive to reverse current, R202 is incorporated in the circuit to limit current to a nominal 1 milliampere. Bypass capacitor C207 isolates the noise generator from the power supply.

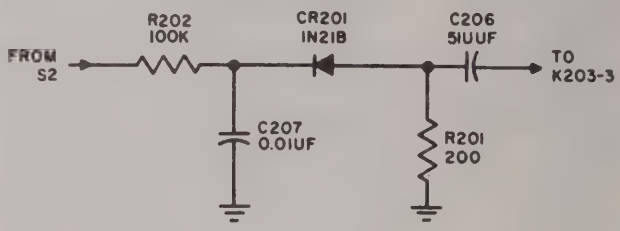


Figure 4-5. Noise Source, Simplified Schematic Diagram

SECTION 5

TROUBLE-SHOOTING

5-1. GENERAL.

This section describes the procedures to be followed when trouble-shooting the antenna group. The procedures described in paragraph 5-3 localize troubles in the equipment to a specific functional circuit. Once the defective functional circuit is localized, apply the procedures of paragraph 5-4 to isolate the trouble to a faulty component.

5-2. TEST EQUIPMENT AND SPECIAL TOOLS.

No special tools or test equipment are required to trouble-shoot the equipment.

5-3. OVERALL TROUBLE-SHOOTING.

Since the antenna group is functionally part of the radio receiver, the need to trouble-shoot the antenna group is indicated whenever the radio receiver functions abnormally and the trouble is apparently confined to the r-f input of the receiver. The only positive failure within the antenna group is the POWER indicator light which does not light when the POWER switch is turned ON.

a. PRELIMINARY CHECK.

Step 1. Using the instruction manual issued with the radio receiver, determine that a malfunction is not caused by the radio receiver.

Step 2. Check the POWER light to check that power is being distributed throughout the antenna group. If it is out, check fuses F1 and F2. Make certain the cover plate of the antenna control unit is in place, thus energizing interlock switch S4.

Step 3. Check any indication of overheating or burning. If such an indication is present, remove all power and check the equipment visually. Supplement this check, as required, with an ohmmeter.

Step 4. Check the control panels of the radio receiver and the antenna control unit to verify that an apparent malfunction is not being caused by an incorrectly positioned switch.

b. CONTROL SETTINGS. - Before starting the trouble-shooting procedures described in table 5-1, set the POWER switch to ON and, in accordance with the instructions issued with that equipment, energize the radio receiver. Remove the top cover of the antenna control unit.

c. TROUBLE-SHOOTING CHART. - Table 5-1 outlines the trouble-shooting procedure for the complete equipment. Perform each step in the

TABLE 5-1. ANTENNA GROUP, SYSTEM TROUBLE-SHOOTING CHART

STEP	PRELIMINARY ACTION	NORMAL INDICATION	NEXT STEP
1	By-pass interlock switch S4 by depressing switch plunger.	POWER light goes on.	If normal indication is obtained, refer to step 2. If POWER light does not go on, check the light. If the light is not defective, refer to table 5-2.
2	Set NOISE GEN switch to ON.	NOISE GEN light goes on.	If normal indication is obtained, refer to step 3. If NOISE GEN light does not go on, check the light. If the light is not defective, refer to table 5-3.

TABLE 5-1. ANTENNA GROUP, SYSTEM TROUBLE-SHOOTING CHART (CONT)

STEP	PRELIMINARY ACTION	NORMAL INDICATION	NEXT STEP
3	Rotate RANGE IN KC switch through all switch positions. Tune radio receiver accordingly.	Noise present at receiver output.	Observe the indications for all switch positions. Refer to step 4.
4	Repeat procedure of step 3 with NOISE GEN switch at OFF.	Radio signals present at receiver output.	If abnormal indication is obtained at all switch positions during procedures of steps 3 and 4, the power circuits or the antenna tuning circuits are defective. Refer to tables 5-2 and 5-4. If abnormal indication is obtained at all switch positions during procedure of step 3 only, the switching circuits or the noise source are defective. Refer to tables 5-3 and 5-5. If abnormal indication is obtained at all switch positions during procedure of step 4 only, the switching circuits or the antenna tuning circuits are defective. Refer to tables 5-3 and 5-5. If abnormal indication is obtained at 1, 2, or 3 positions of the RANGE IN KC switch during procedures of step 3 and step 4, the switching circuits or the antenna tuning circuits are defective. Refer to tables 5-3 and 5-4.

TABLE 5-2. POWER CIRCUITS, FUNCTION SECTION TROUBLE-SHOOTING CHART

STEP	TEST POINT	PRELIMINARY ACTION	NORMAL INDICATION	NEXT STEP
1		Depress plunger of interlock switch S4.	POWER light goes on.	If indication is abnormal, refer to step 2. If indication is normal, refer to step 3.
2		Disconnect plug P1 from jack J1. Short terminals A and B of jack J1. Depress plunger of interlock switch S4.	POWER light goes on.	If indication is normal, interlock S201 is defective. If indication is abnormal, interlock S4 is defective.
3		Turn NOISE GEN switch to ON. Depress plunger of interlock S4. Check that P1 and J1 have been reconnected.	NOISE GEN light goes on.	If indication is normal, refer to step 4. If indication is abnormal, NOISE GEN switch is defective.

TABLE 5-2. POWER CIRCUITS, FUNCTION SECTION TROUBLE-SHOOTING CHART (CONT)

STEP	TEST POINT	PRELIMINARY ACTION	NORMAL INDICATION	NEXT STEP
4	Figures 5-1 and 5-3	Connect voltmeter from junction of resistors R2 and R3 to ground. Depress plunger of interlock S4.	330 volts dc.	If indication is normal, refer to step 5. If indication is abnormal, check tube V1 and tube circuit (figure 5-8). Repair or replace defective part.
5	Figures 5-1 and 5-3	Connect voltmeter from junction of resistor R4 and capacitor C2 to ground. Depress plunger of interlock S4.	105 volts dc regulated.	If indication is normal, refer to table 5-3. If indication is abnormal, check tube V2 and tube circuit (figure 5-8). Repair or replace defective part.
6	Figures 5-1 and 5-3	Connect voltmeter from junction of resistors R15 and R5 to ground. Depress plunger of interlock S4. Rotate INCREASE FREQUENCY control to maximum counterclockwise position.	54 to 60 volts dc, regulated: Band 1 60 volts Band 2 58 volts Band 3 56 volts Band 4 54 volts	If indication is abnormal, check resistors R5A and R5B and capacitor C3. If trouble sympton persists, refer to table 5-4.

order listed, except as noted in the NEXT STEP column. See figure 3-1 for the location of controls. Physical locations of all other components are shown in figures 5-5 and 5-6. Refer to figure 6-2, the overall schematic diagram of the antenna group.

5-4. POWER CIRCUITS, FUNCTIONAL SECTION TROUBLE-SHOOTING.

Power circuit trouble-shooting is indicated whenever all noise and radio frequency outputs of the radio receiver are abnormal. It should be noted that a defect in the primary of variable inductor L201 or the output of the radio receiver will cause a similar indication.

a. PRELIMINARY CHECK. - Check fuses F1 and F2; replace if necessary. Check the panel lights. Make certain that the control cable is properly terminated at the power source. Remove the top cover of the antenna control unit.

b. CONTROL SETTINGS. - Turn the POWER switch to ON, and make certain the radio receiver is properly energized.

c. TROUBLE-SHOOTING CHART. - Table 5-2 outlines the trouble-shooting procedure for the power circuits. Perform each step in the order listed, except as noted in the next step column. At the conclusion of trouble-shooting, reassemble components or wiring removed during the test procedure. See figure 3-1 for control location. Physical location of power circuit components are shown in figures 5-5 and 5-6. Refer to the overall schematic diagram, figure 6-2, and to figure 5-1, power circuits service schematic diagram.

5-5. SWITCHING CIRCUITS, FUNCTIONAL TROUBLE-SHOOTING.

Switching circuit trouble-shooting is indicated whenever a defect in the equipment exists and the power circuits, table 5-2, have been eliminated as a possible source of trouble. It is recommended that the switching circuits be checked out before the antenna tuning circuits or the noise generating circuits since the latter two circuits are relatively inaccessible.

a. PRELIMINARY CHECKS. - Refer to step 4 of table 5-1. Note the trouble symptom before proceeding to table 5-3.

TABLE 5-3. SWITCHING CIRCUITS, FUNCTIONAL SECTION TROUBLE-SHOOTING CHART

STEP	TEST POINT	PRELIMINARY ACTION	NORMAL INDICATION	NEXT STEP
1	① Figures 5-1 and 5-5	Set RANGE IN KC switch to 14 - 38 KC. Place an ohmmeter from junction of resistors R2 and R3 to ground.	7,000 ohms, approximate.	If indication is normal, refer to step 2. If indication is abnormal, check resistor R3, deck A of switch S3, resistors R14 and R7, switch S2 and resistor R6. Repair or replace defective part.
2	① Figures 5-1 and 5-5	Repeat procedure of step 1 with NOISE GEN switch at ON.	7,000 ohms, approximate.	If indication is normal, refer to step 3. If indication is abnormal, check coil or relay K203 and switch S2. Repair or replace defective part.
3	① Figures 5-1 and 5-5	Repeat procedure of step 2 with RANGE IN KC switch at 38 - 95 KC.	7,000 ohms. approximate.	If indication is normal, refer to step 4. If indication is abnormal, check resistor R8, coil of relay K202 and switch S3, decks "A" and "C". Repair or replace defective part.
4	① Figures 5-1 and 5-5	Repeat procedure of step 3 with RANGE IN KC switch at 95 - 235 KC.	7,000 ohms. approximate.	If indication is normal, refer to step 5. If indication is abnormal, check resistor R9, coil of relay K201 and switch S3, decks "A" and "C". Repair or replace defective part.
5	①	Repeat procedure of step 4 with RANGE IN KC switch at 235 - 600 KC.	7,000 ohms. approximate.	Check continuity between coils of relays K201 and K202, and switch S3, decks "A" and "C". Repair or replace defective part.

b. CONTROL SETTINGS. - Turn the POWER switch to OFF and de-energized the radio receiver.

c. TROUBLE-SHOOTING CHART. - Table 5-3 outlines the trouble-shooting procedure for the switching circuits. Perform each step in the order listed, except as noted in the NEXT STEP column. At the conclusion of the trouble-shooting, reassemble components or wiring removed during the test procedure. See figure 3-1 for control location. Physical location of switching circuit components are shown in figure 5-5. Refer to the overall schematic, figure 6-2, and to figure 5-2, switching circuits, service schematic diagram.

5-6. ANTENNA TUNING CIRCUITS, FUNCTIONAL TROUBLE-SHOOTING.

Antenna tuning circuit trouble-shooting is indicated whenever a defective equipment exists and the power circuits, table 5-2, and switching circuits, table 5-3, have been eliminated as a source of trouble.

a. PRELIMINARY CHECK. - Refer to step 4 of table 5-1. Note the trouble symptom before proceeding to table 5-4.

b. CONTROL SETTINGS. - Turn the POWER switch to OFF and de-energize the radio receiver.

TABLE 5-4. ANTENNA TUNING CIRCUITS, FUNCTIONAL SECTION TROUBLE-SHOOTING CHART

STEP	TEST POINT	PRELIMINARY ACTION	NORMAL INDICATION	NEXT STEP
1	Figures 5-1 and 5-5	Connect ohmmeter from junction of resistors R15 and R5 to ground. Set RANGE IN KC switch to 14 - 38 KC.	2,400 ohms, approximate.	If indication is normal, proceed to step 2. If indication is abnormal, check resistor R13, deck "D" of switch S3, capacitor C201 and the primary of variable inductor L201. Repair or replace defective part.
2	Figures 5-1 and 5-5	Repeat procedure of step 1 with RANGE IN KC switch at 38 - 95 KC.	1,900 ohms, approximate.	If indication is normal, proceed to step 3. If indication is abnormal, check deck "D" of switch S3 and resistor R12. Repair or replace defective part.
3	Figures 5-1 and 5-5	Repeat procedure of step 2 with RANGE IN KC switch at 95 - 235 KC.	1,800 ohms, approximate.	If indication is normal, proceed to step 4. If indication is abnormal, check deck "D" of switch S3 and resistor R11.
4	Figures 5-1 and 5-5	Repeat procedure of step 3 with RANGE IN KC switch at 235 - 600 KC.	1,500 ohms, approximate.	If indication is normal, proceed to step 5. If indication is abnormal, check deck "D" of switch S3 and resistor R10. Repair or replace defective part.
5		Set POWER and NOISE GEN switches at ON. Operate equipment at all four ranges of RANGE IN KC switch. Tune radio receiver to corresponding frequencies.	Noise at radio output.	Note indications and refer to step 6.
6		Repeat the procedure of step 5 with NOISE GEN switch at OFF.	Received signals at radio receiver output.	If all indications notes during procedures of steps 5 and 6 are abnormal, check output of relay K201 pin 6 to receiver input. If all indications of step 5 only are abnormal, the noise generator is defective. Refer to paragraph 5-7. If all indications of step 6 only are abnormal, the antenna is defective. Refer to paragraph 5-8.

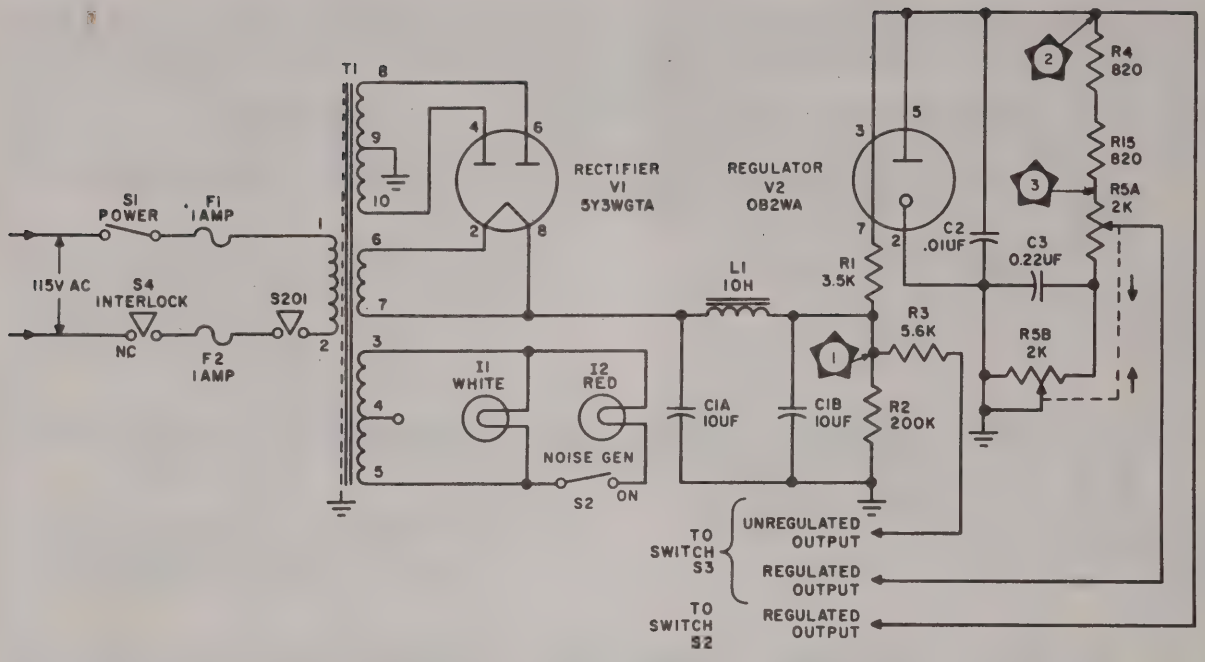


Figure 5-1. Power Circuits, Service Schematic Diagram

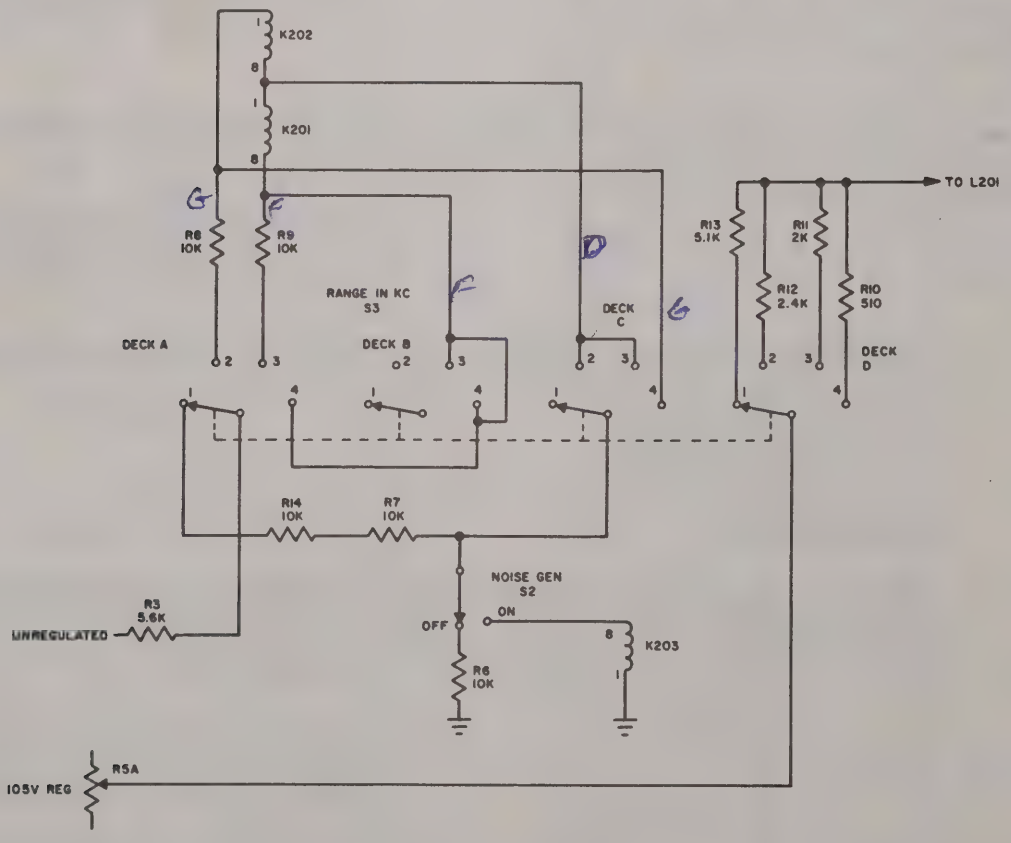


Figure 5-2. Switching Circuits, Service Schematic Diagram

c. TROUBLE-SHOOTING CHART. - Table 5-4 outlines the trouble-shooting procedure for the antenna tuning circuits. Perform each step in the order listed, except as noted in the NEXT STEP column. At the conclusion of trouble-shooting, reassemble components or wiring removed during the test procedure. See figure 3-1 for control location. Physical location of antenna tuning circuit components are shown in figures 5-5 and 5-6. Refer to the overall schematic diagram, figure 6-2, and to figure 5-3, antenna tuning circuit service schematic diagra.

5-7. NOISE SOURCE, FUNCTIONAL TROUBLE-SHOOTING.

a. Noise source trouble-shooting is indicated whenever operation with the noise generator is defective, the remainder of the equipment operation is normal and the switching circuits, table 5-3, have been eliminated as a possible source of trouble.

b. The noise source consists of switch S2, resistors R201 and R202, capacitors C206 and C207, and relay K203. Power for this circuit is derived from the unregulated source, which drives relay K203, and the regulated source, which drives diode CR201. The power supply has been checked out in the procedure of table 5-2, and the relay has been checked out in the procedures of table 5-3. Thus, if the noise falls, the trouble is probably in the silicon diode. However, after removing the existing diode, but before the actual replacement, check the two resistors and capacitors of the circuit. Noise source components are shown in figures

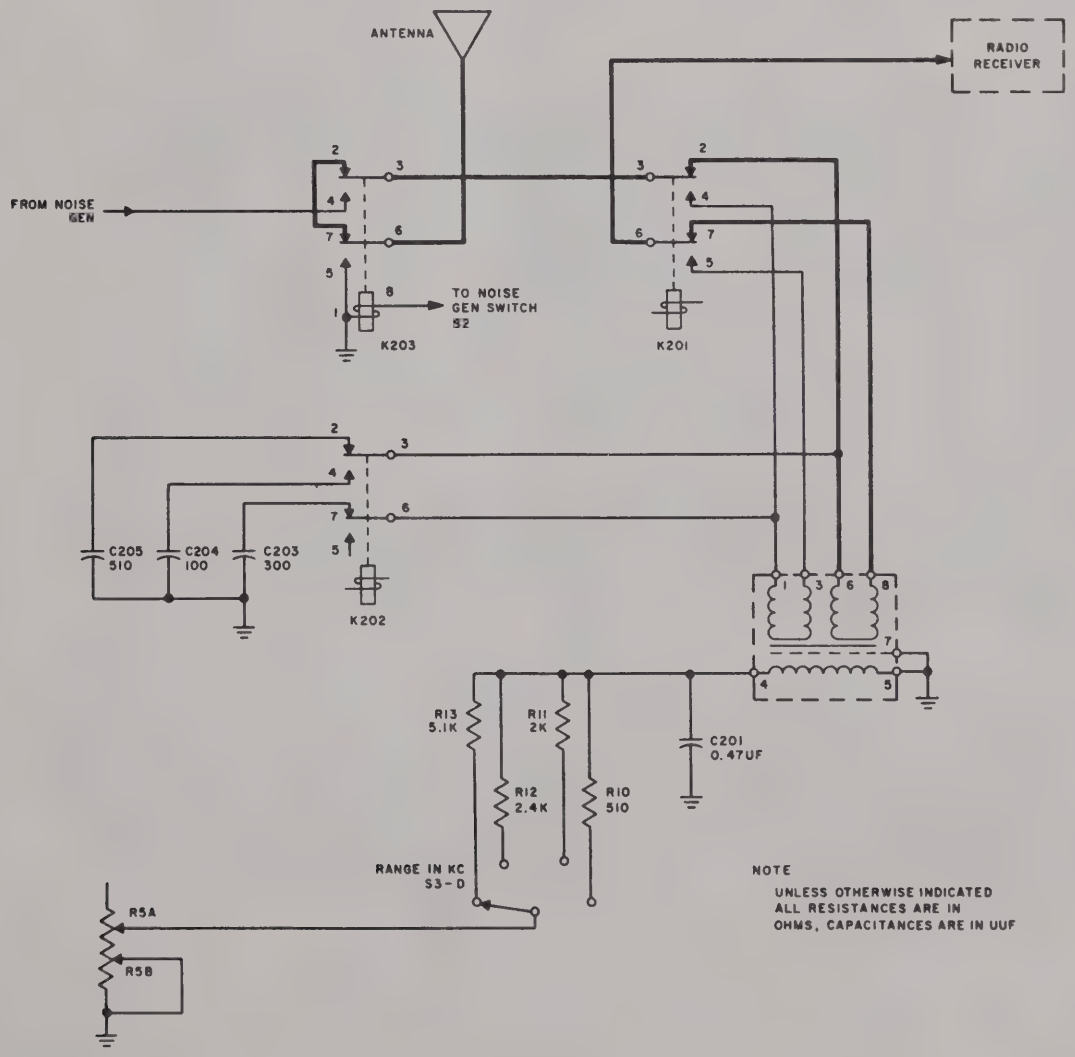


Figure 5-3. Antenna Tuning Circuits, Service Schematic Diagram

5-5 and 5-6. Refer to figure 5-4, noise source service schematic diagram, and the overall schematic diagram, figure 6-2.

5-8. TYPICAL TROUBLES.

There are four typical troubles that may be encountered within the antenna group. These are the failure of a fuse, tube V1, silicon diode CR201 or the shorting of the antenna. The latter trouble is caused by deposits of soot or salt film on the antenna insulator. Breakdowns in service due to this trouble may be avoided b periodic cleaning of the insulator. In trouble-shooting the equipment, make reference to figures 5-7 and 5-8, the primary power distribution diagram and the voltage and resistance diagram for the equipment.

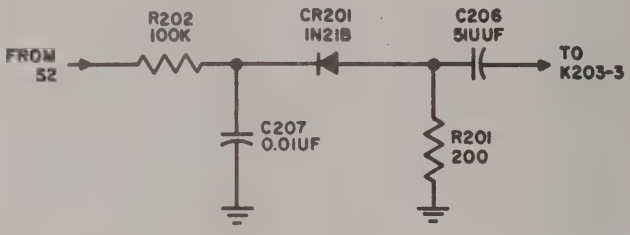


Figure 5-4. Noise Source, Service Schematic Diagram

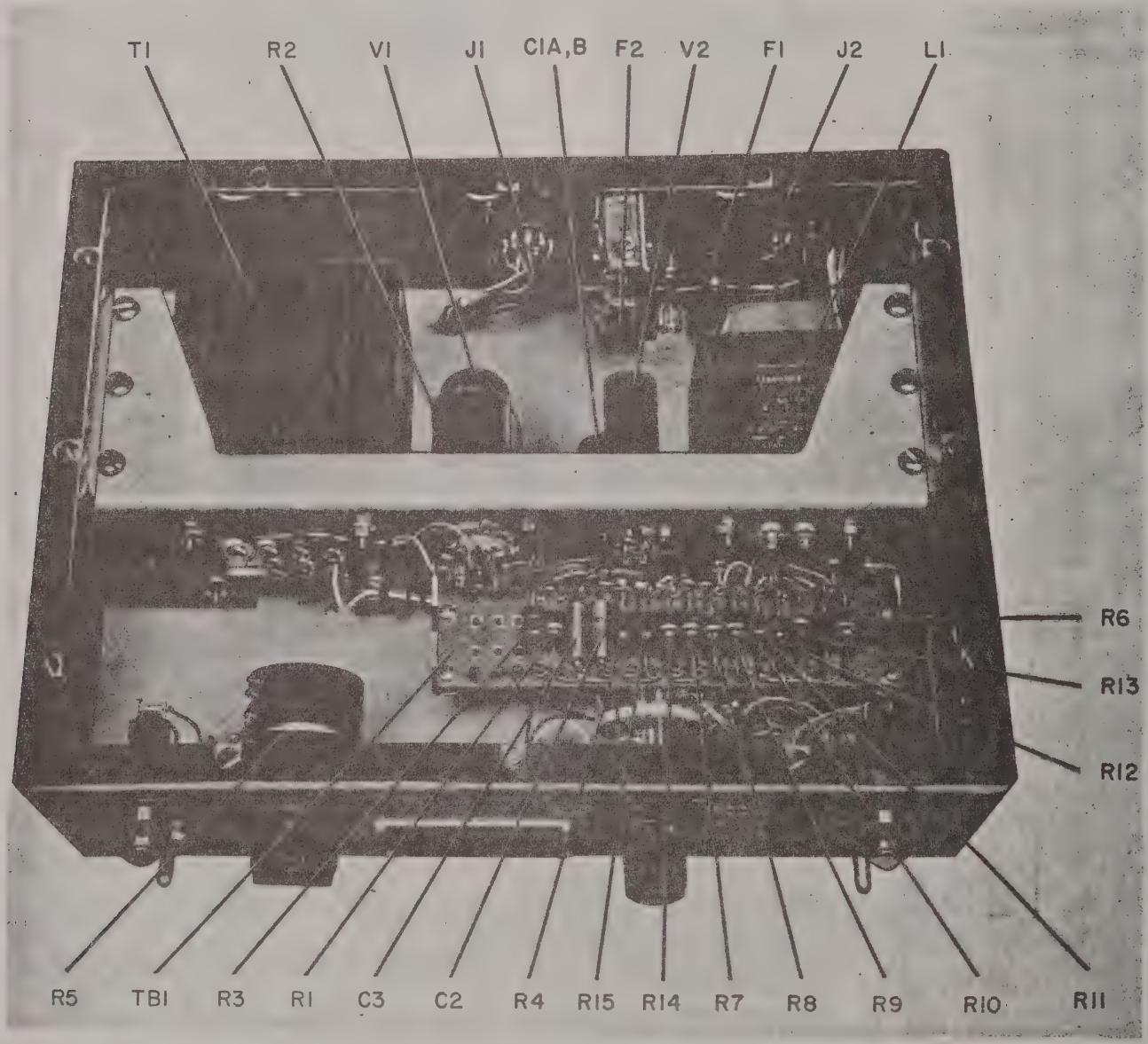


Figure 5-5. Antenna Control Unit, Location of Parts

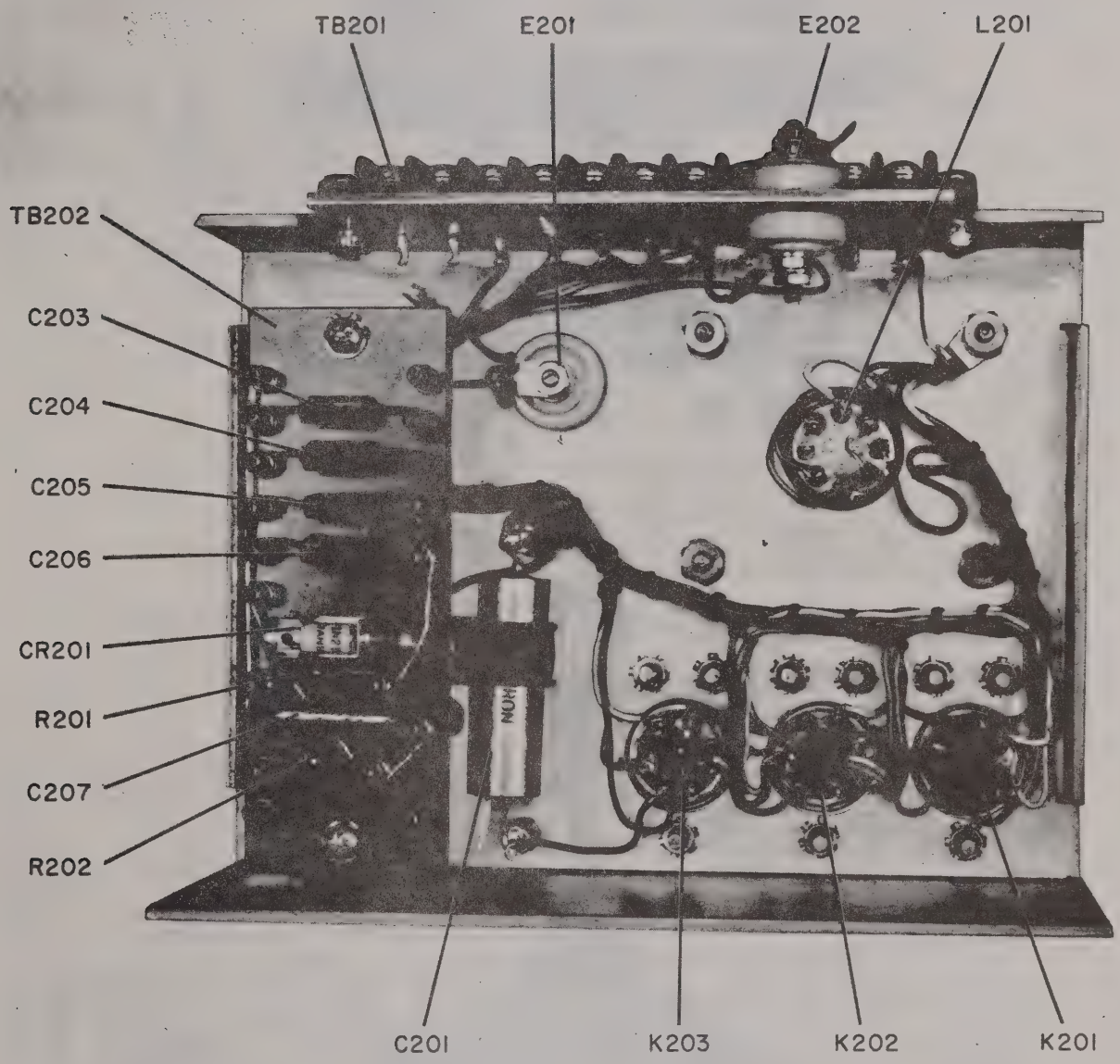


Figure 5-6. Radio Frequency Tuner TN-334A/SRA-17A, Location of Parts

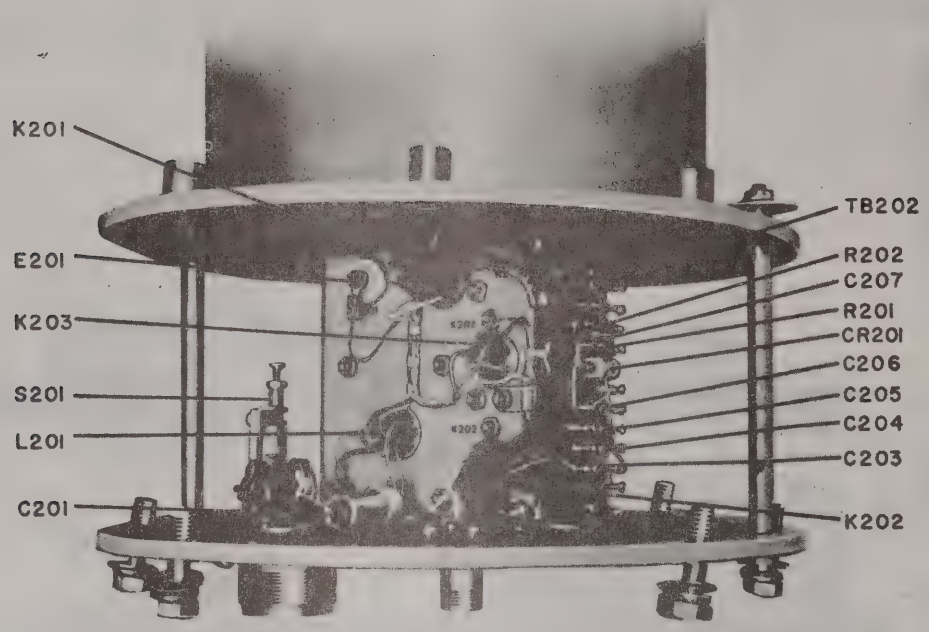


Figure 5-6A. Radio Frequency Tuner TN-418/SRA-17C, Location of Parts

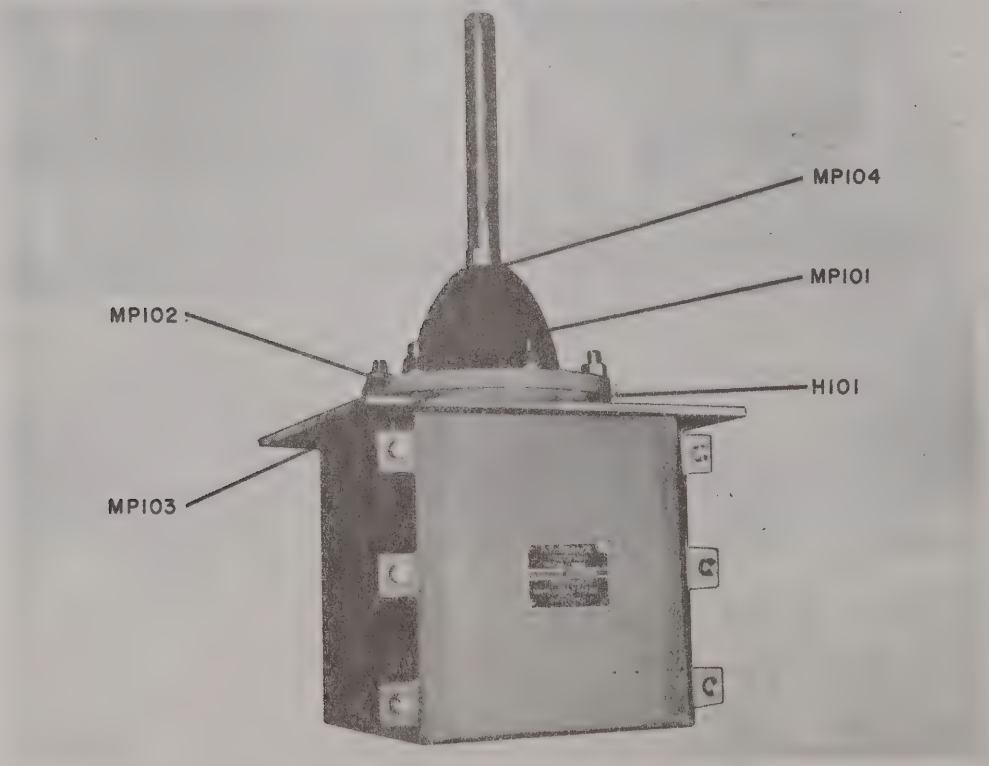


Figure 5-7. Antenna, Location of Parts

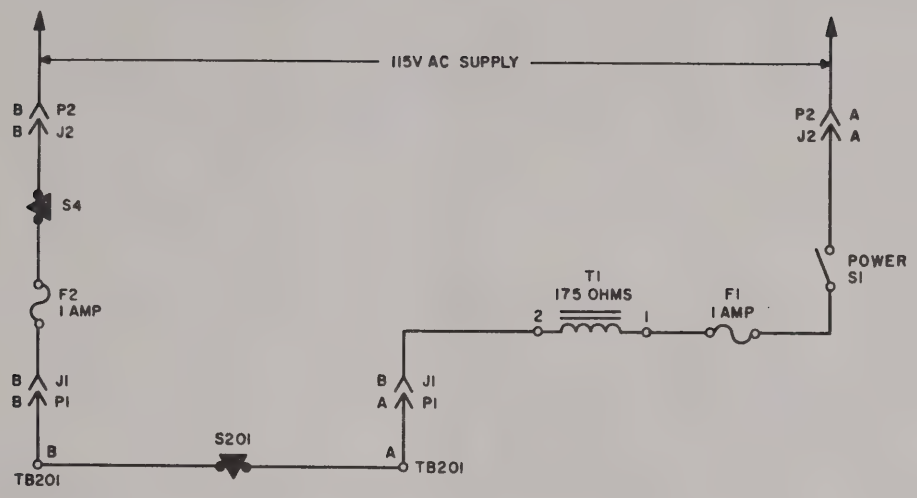
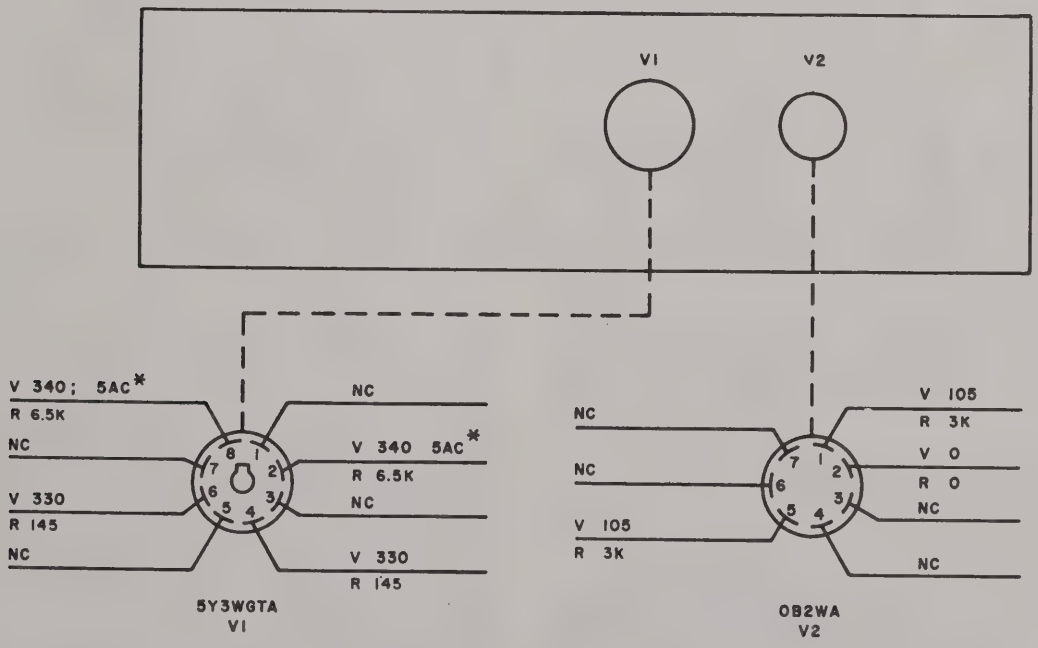


Figure 5-8. Antenna Group, Primary Power Distribution, Schematic Diagram



NOTES

ALL READINGS TAKEN WITH A VTVM AND WITH THE INCREASE FREQUENCY CONTROL ROTATED FULLY CLOCKWISE

KEY TO SYMBOLS

V	INDICATES DC VOLTAGE TO GROUND
AC	INDICATES AC VOLTAGE
*	5 VAC BETWEEN PINS MARKED WITH ASTERISK

Figure 5-9. Antenna Control Unit, Voltage and Resistence Diagram

SECTION 6

SERVICE AND REPAIR

6-1. FAILURE REPORT.

Report each failure of the equipment, whether caused by a defective part, wear, improper operation, or an external cause. Use ELECTRONIC FAILURE REPORT form DD787. Each pad of the forms includes full instructions for filling out the forms and forwarding them to the Bureau of Ships. However, the importance of providing complete information cannot be emphasized too much. Be sure that you include the model designation and serial number of the equipment (from the equipment identification plate), the type number and serial number of the major unit (from the major unit identification plate), and the type number and reference designation of the particular part (from the technical manual). Describe the cause of the failure completely, continuing on the back of the form if necessary. Do not substitute brevity for clarity. And remember - there are two sides to the failure report -

"YOUR SIDE"	"BUREAU SIDE"
Every FAILURE REPORT IS A BOOST for you:	
1. It shows that you are doing your job.	1. Evaluate present equipment.
2. It helps make your job easier.	2. Improve future equipment.
3. It insures available replacements.	3. Order replacements for stock.
4. It gives you a chance to pass your knowledge to every man on the team.	4. Prepare field changes.
	5. Publish maintenance data.

Always keep a supply of failure report forms on board. You can get them from the nearest Forms and Publications Supply Point.

6-2. INTRODUCTION.

This section is divided into three subsections as follows:

6-3. Preventive Maintenance
6-4. Maintenance Standards
6-8. Repair

The Preventive Maintenance subsection includes information regarding general preventive maintenance techniques and procedures. The Maintenance Standards subsection serves in lieu of a separate "Maintenance Standards Book" for this equipment and provides procedures and schedules for performing POMSEE preventive maintenance check-off. The Repair subsection gives instructions for repair of equipment defects noted during equipment operation, preventive maintenance, and trouble-shooting.

6-3. PREVENTIVE MAINTENANCE.

The instructions given in a and b below cover general procedures for preventive maintenance of the antenna group. However, the detailed requirements for periodic POMSEE maintenance check-off of the antenna group are given under paragraph 6-4.

a. CLEANING. - The equipment should be cleaned at regular intervals to insure its satisfactory operation. The electrical components on the antenna control unit chassis should be cleaned with compressed air and a soft brush to remove accumulated dirt. The antenna cone should be cleaned with solvent to remove any traces of soot or salt film.

b. INSPECTION.

(1) Check all connectors throughout the equipment for tightness. Tighten or replace as necessary.

(2) Check all wiring for loose or broken connections, corroded or dirty terminals, and frayed or charred insulation. Clean corroded or dirty terminals with a brush and solvent. If it is necessary to resolder connections to the silicon diode, CR201, use a heat shunt between the diode and the connection to avoid damaging the part.

(3) Check the indicator lamps by setting the POWER and NOISE GEN switches to ON. Rotate the indicator lamp assemblies. Make certain the light becomes more intense as the respective assembly is rotated in the clockwise direction.

6-4. MAINTENANCE STANDARDS

6-5. INTRODUCTION.

a. GENERAL.

The tests prescribed herein provide a systematic and efficient method for checking and performing routine preventive maintenance on the antenna group. This section contains specific test procedures which provide a series off reference standards representing proper performance of the specified equipment. It also contains a series of periodic maintenance check-off procedures, which, when performed as directed, will detect areas of subnormal performance. Comparison of presentive-maintenance results with the reference standards, and proper analysis and correction of any abnormal results, will serve to avert impending equipment failure.

This section is divided into two parts: Tests for Establishing Reference Standards (paragraph 6-6) and Preventive Maintenance Check-Off (paragraph 6-7). Paragraph 6-6 contains a block diagram subdivided into functional sections and a list of tests which provide the reference standards for the equipment. Collectively, these reference standards indicate the equipment capability. Paragraph 6-7 contains a series of preventive-maintenance tests and procedures (with necessary instructions, illustrations, and charts) arranged by time periods. When properly performed, these tests and procedures indicate the performance of individual circuits and also provide for systematic maintenance or the equipment. All procedures designated by step numbers (1, 2, etc) are referred to in the Performance Standards Sheet for this equipment.

The test equipment required to perform these test is a vacuum tube voltmeter, Multimeter AN/PSM-4, or equivalent. The times required to perform the tests are listed in table 6-1.

b. TESTS FOR ESTABLISHING REFERENCE STANDARDS. - The maintenance standard tests are listed in table 6-2. These tests are divided into functional sections which agree with the functional sections of the block diagram in figure 6-1. The procedures and illustrations for performing each step are located in paragraph 6-7, and are referred to in table 6-2.

TABLE 6-1. ESTIMATED TIME REQUIRED TO PERFORM POMSEE

PARAGRAPH 6-6	
SECTION	TIME REQ'D
A	10 min
B	20 min
C	15 min
TOTAL	45 min
PARAGRAPH 6-7	
PERIODIC CHECKS	ESTIMATED TIME REQUIRED
Daily	7 min
Monthly	20 min
TOTAL REQ'D Per Quarter	13 hrs
Ave per day	9 min

c. PREVENTIVE MAINTENANCE CHECK-OFF.

Paragraph 6-7 contains test procedures in table form (procedure table), to be performed by the maintenance technician or operator; these procedures are scheduled for regular intervals (daily, weekly, etc).

At the top of each procedure table is a list of operating conditions and control settings which apply to the entire table unless noted otherwise in the procedures of the step.

The step numbers of the procedures correspond to the "step" numbers on the accompanying illustrations. Arrows leading from a given "step" number on the illustration graphically present certain basic information given in the associated step of the procedure table, as follows: The point where the test equipment is to be connected, and the "indicator" from which the test is to be taken.

Each day, except when in port, the daily checks shall be accomplished; each week the weekly checks shall be accomplished; etc. Upon com-

TABLE 6-2. LIST OF MAINTENANCE STANDARDS PROCEDURES

SECTION	STEP	ACTION REQUIRED	REFER TO		
			PERIOD	STEP	PAGE
A POWER CIRCUITS	1	Record regulated d-c supply voltage to noise section	M	1	
	2	Record regulated d-c supply voltage to tuner section	M	2	
	3	Record unregulated d-c supply voltage to tuner section	M	3	
C NOISE CIRCUITS	4	Record radio receiver sensitivity	D	1	

NOTES:

PERIOD CODES:

D - daily (each change of watch); M - monthly

pleting each test as prescribed in the procedure tables, the results shall be entered and properly dated in a check-off chart prepared according to the instructions given in paragraph 6-7. These entries are of prime importance, for they indicate whether or not the equipment is functioning at maximum efficiency. Comparison of a given indication with indications previously obtained, and with the reference standard, will quickly reveal any significant change. It is expected that the readings will show nominal variances from time to time. This does not necessarily mean that the equipment is operating improperly. If, however, a particular step produces an indication which varies progressively each time the check is made, it indicates improper operation or impending failure, and corrective measures should be taken.

d. PLACING THE EQUIPMENT IN OPERATION FOR TESTS.

(1) When the instructions call for the equipment to be placed in full operation, set the controls as indicated below. Allow the equipment a 15-minute warm up interval to permit the circuits to become stabilized.

POWER switch: ON
NOISE GEN switch: ON

(2) When the procedure calls for settings of controls other than the aforementioned, adjust the controls that require a different setting. After the step is performed, return the controls to the previous settings.

6-6. TESTS FOR ESTABLISHING REFERENCE STANDARDS.

The tests listed in table 6-2 are the maintenance standard tests for the antenna group. Information regarding the intent and accomplishment or these tests is given in paragraph 6-5. The tests are subdivided by functional group; each group is designated by a letter (A, B, C) which agrees with the letter identifications on the block diagram, figure 6-1. In addition to the subdivision by group, the tests are listed in a suggested sequence for performing the tests; deviation from the suggested order will in no way affect the result or utility of the reference standard.

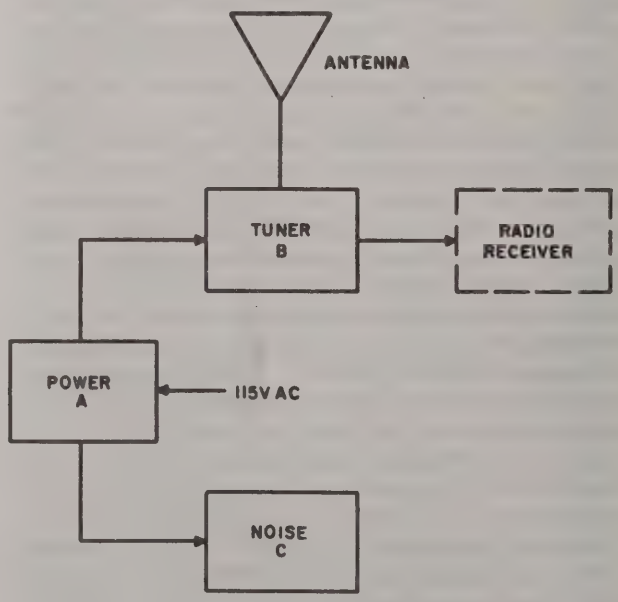


Figure 6-1. Antenna Group, Block Diagram for Maintenance Standards Tests

6-7. PREVENTIVE MAINTENANCE CHECK-OFF.

After performing each of the following steps, the results should be recorded in the appropriate column of a check-off chart prepared as discussed below. The entry should be initialed and dated.

For each daily step, prepare a "first and second year of operation" chart following the sample given below:

Step (1)

Enter the name of the month in which the maintenance step is begun in the first empty block of the top row. Fill in the names of the months consecutively thereafter for a period of two years. Log the result in appropriate space after performing Daily step 1 (page 2-1).

	1st Year of Operation												2nd Year of Operation											
1																								
2																								
3																								
4																								
5																								
6																								
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For the monthly steps, prepare two charts following the samples given below:

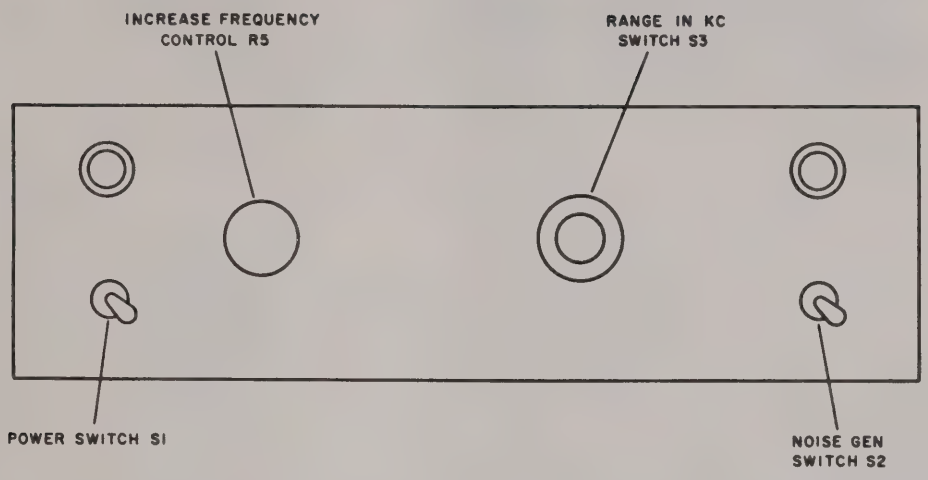
1st Year of Operation

Month	19—	19—	19—	19—	19—	19—	19—	19—	19—	19—	19—	19—
Step (1)												
Step (2)												
Step (3)												

2nd Year of Operation

Month	19—	19—	19—	19—	19—	19—	19—	19—	19—	19—	19—	19—
Step (1)												
Step (2)												
Step (3)												

Paragraph 6-7 - Daily
Step 1

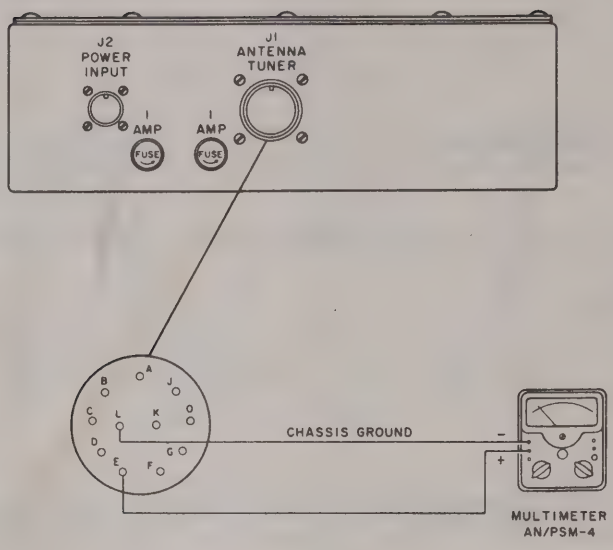


Control Settings:

See preliminary control settings

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
(1)	Check radio receiver sensitivity	Receiver output	-4 db, min
	PROCEDURE: Peak the equipment using the noise input. Rotate INCREASE FREQUENCY control fully counterclockwise. Reduce receiver gain to 0 db. Repeat INCREASE FREQUENCY control and record receiver noise level.		

Paragraph 6-7 - Monthly
Steps 1, 2, and 3



Control Settings:

See preliminary control settings

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
(1)	Record regulated d-c supply voltage to noise section	Multimeter AN/PSM-4	105V DC
	PROCEDURE: Disconnect connector P1 from jack J1. Place jumper across J1A and J1B. Connect Multimeter AN/PSM-4, using 250-volt d-c scale, from pin E to ground (pin L).		
(2)	Record regulated d-c supply voltage to tuner section	Multimeter AN/PSM-4	92V DC
	PROCEDURE: Connect Multimeter AN/PSM-4, using 250-volt d-c scale, from pin C to ground (pin L).		
(3)	Record unregulated d-c supply voltage to tuner section	Multimeter AN/PSM-4	330V DC
	PROCEDURE: In turn, connect Multimeter AN/PSM-4, using 400-volt d-c scale, from pins H, G, and F to ground (pin L). For readings at pins H, G, and F, set RANGE IN KC switch to 14-35, 35-95 and 95-235 KC, respectively.		

6-8. REPAIR.

6-9. GENERAL.

Repair procedures for the antenna group are conventional and require neither special tools nor special test equipment. Good-practice techniques only are required.

WARNING

Power to the antenna control unit and the radio frequency tuner is removed via interlocks when the cover plates of the units are removed. However, when working on these units, always disconnect the power cable.

In maintaining the equipment, make use of the overall schematic diagram, figure 6-2, and the overall wiring diagram.

NOTES:
1. UNLESS OTHERWISE SPECIFIED, ALL RESISTANCES ARE IN OHMS, CAPACITANCES ARE IN UUF
2. POSITION 1 14-38KC RANGE
POSITION 2 38-95KC RANGE
POSITION 3 95-235KC RANGE
POSITION 4 235-600KC RANGE

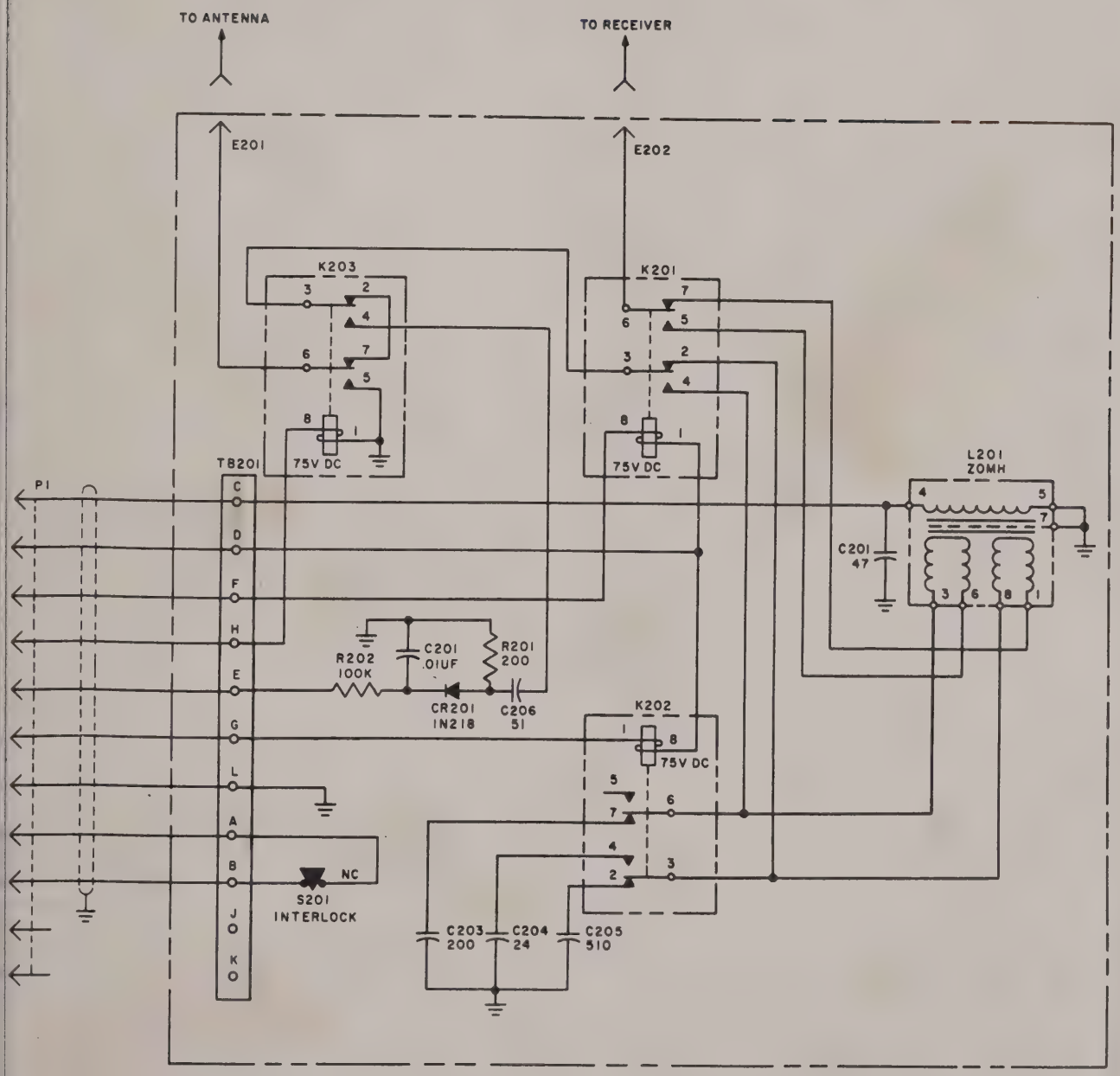
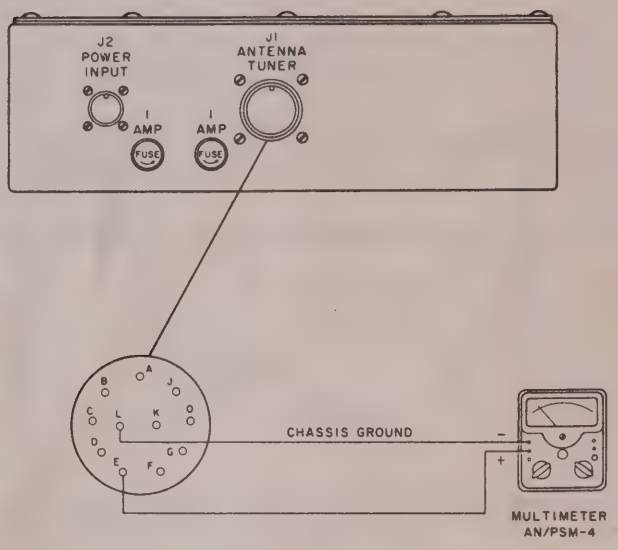


Figure 6-2. Antenna Group AN/SRA-17B, Schematic Diagram

Paragraph 6-7 - Monthly
Steps 1, 2, and 3



Control Settings:

See preliminary control settings

STEP NO.	ACTION REQUIRED	READ INDICATION ON	REFERENCE STANDARD
(1)	Record regulated d-c supply voltage to noise section	Multimeter AN/PSM-4	105V DC
	PROCEDURE: Disconnect connector P1 from jack J1. Place jumper across J1A and J1B. Connect Multimeter AN/PSM-4, using 250-volt d-c scale, from pin E to ground (pin L).		
(2)	Record regulated d-c supply voltage to tuner section	Multimeter AN/PSM-4	92V DC
	PROCEDURE: Connect Multimeter AN/PSM-4, using 250-volt d-c scale, from pin C to ground (pin L).		
(3)	Record unregulated d-c supply voltage to tuner section	Multimeter AN/PSM-4	330V DC
	PROCEDURE: In turn, connect Multimeter AN/PSM-4, using 400-volt d-c scale, from pins H, G, and F to ground (pin L). For readings at pins H, G, and F, set RANGE IN KC switch to 14-35, 35-95 and 95-235 KC, respectively.		

6-8. REPAIR.

6-9. GENERAL.

Repair procedures for the antenna group are conventional and require neither special tools nor special test equipment. Good-practice techniques only are required.

WARNING

Power to the antenna control unit and the radio frequency tuner is removed via interlocks when the cover plates of the units are removed. However, when working on these units, always disconnect the power cable.

In maintaining the equipment, make use of the overall schematic diagram, figure 6-2, and the overall wiring diagram.

Figure 6-2

NOTES
1. UNLESS OTHERWISE SPECIFIED, ALL RESISTANCES ARE IN OHMS, CAPACITANCES ARE IN UUF
2. POSITION 1 14-38KC RANGE
POSITION 2 38-95KC RANGE
POSITION 3 95-235KC RANGE
POSITION 4 235-600KC RANGE

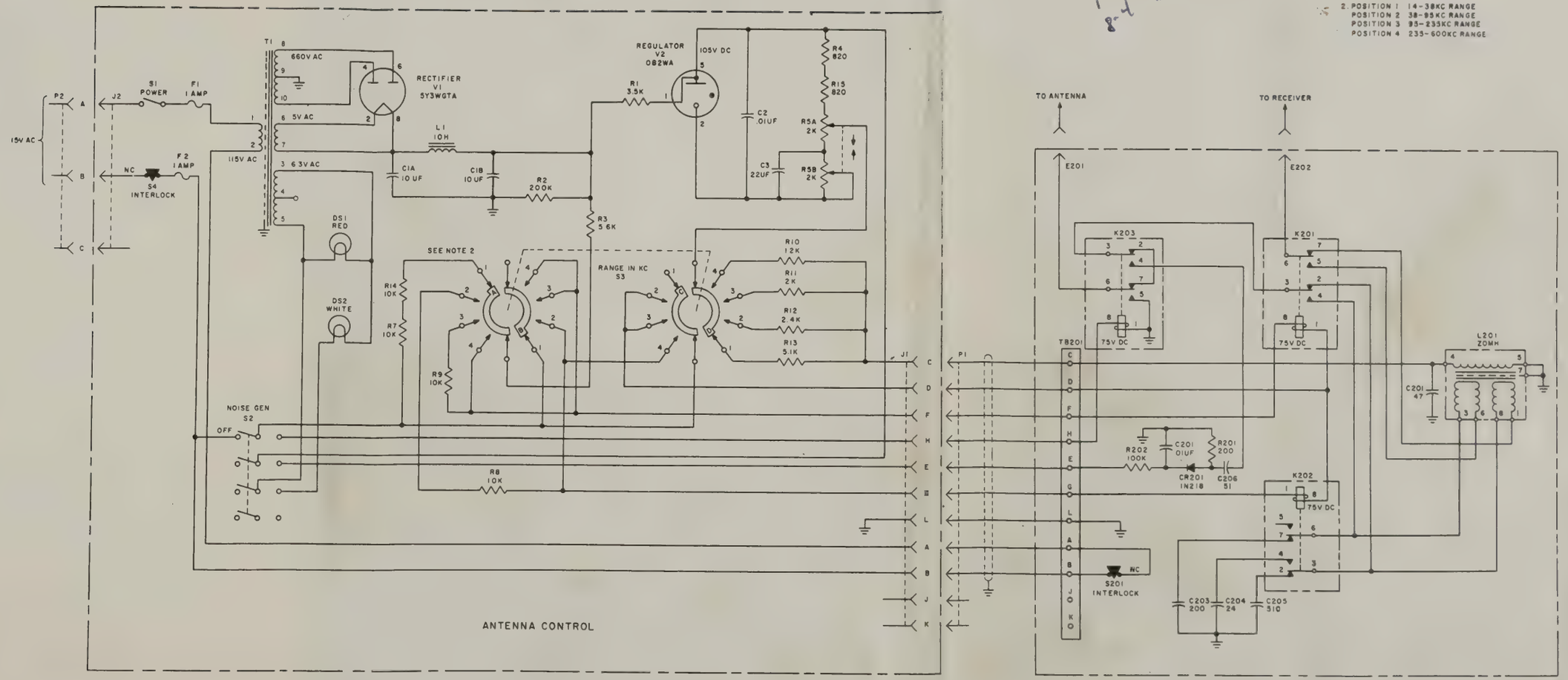
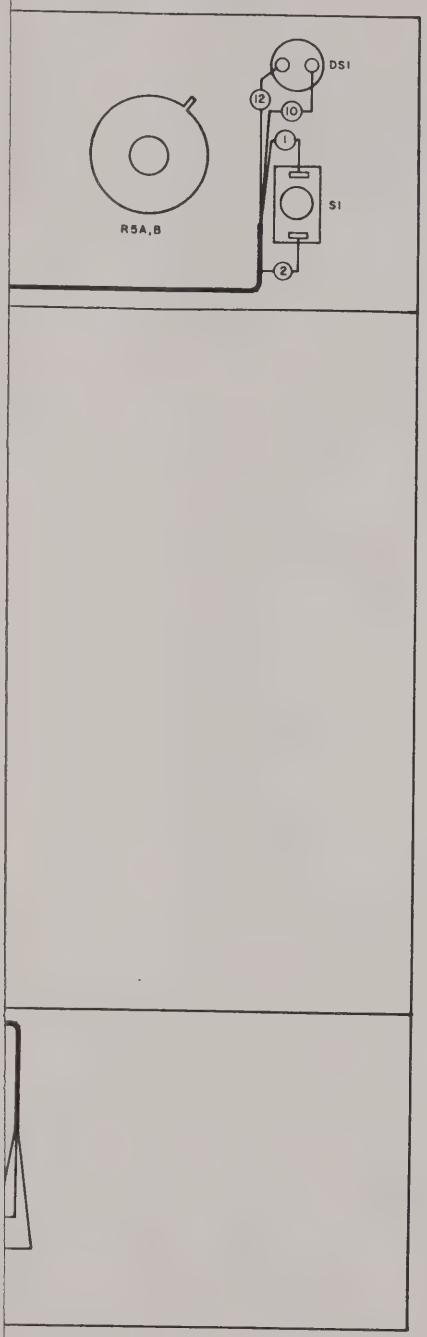
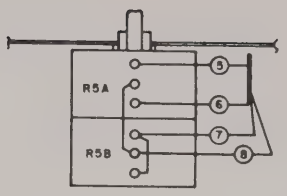


Figure 6-2. Antenna Group AN/SRA-17B, Schematic Diagram





tenna Control Unit, Wiring Diagram

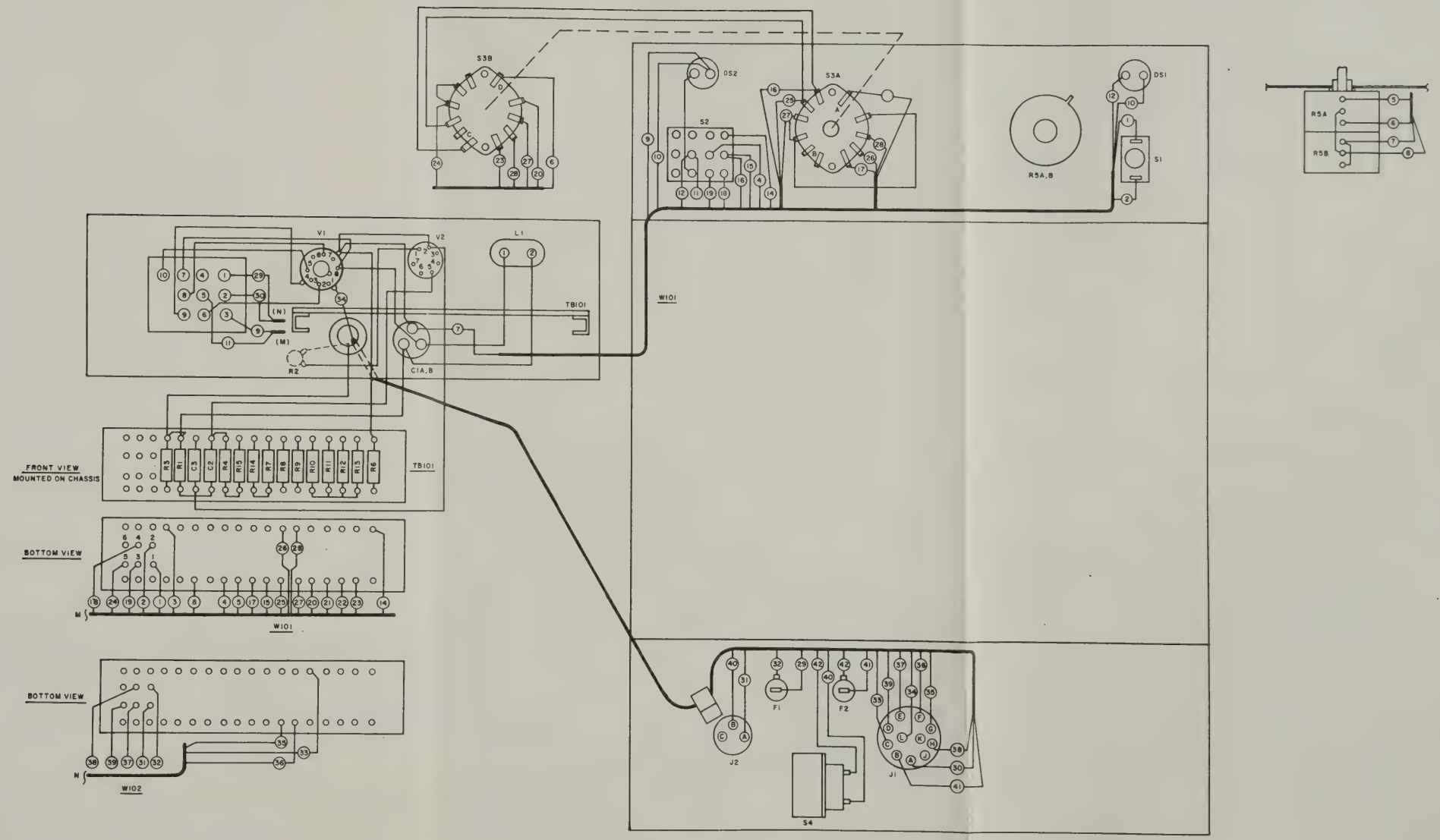


Figure 6-3. Antenna Control Unit, Wiring Diagram

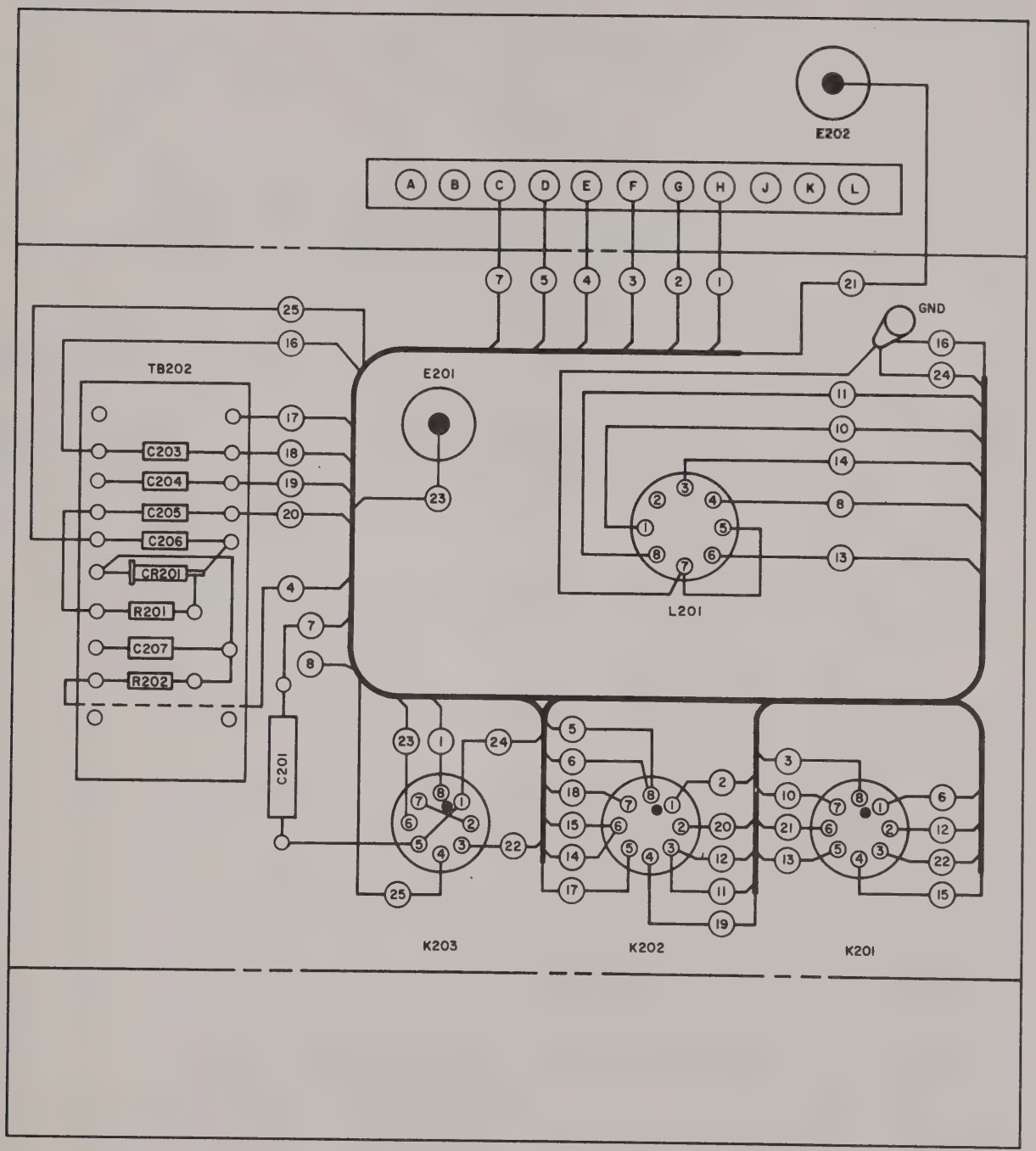


Figure 6-4. Radio Frequency Tuner, Wiring Diagram

SECTION 7A

SUPPLEMENTARY PARTS LIST

NOTE

With the exception of the following components, the parts list contained in section 7 relates to Antenna Group AN/SRA-17B and AN/SRA-17C. The components listed in table 7-1A relate only to those components of the AN/SRA-17C that differ from the AN/SRA-17B.

TABLE 7-1A. ANTENNA GROUP AN/SRA-17C, MAINTENANCE PARTS LIST

ANTENNA CONTROL C-6193/SRA-17C

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
J1		CONNECTOR, RECEPTACLE, ELECTRICAL: type MS3102A-24-20S	Provides control output Figure 5-5
J2		CONNECTOR, RECEPTACLE, ELECTRICAL: type MS3102A-14S-7P	Provides power termination Figure 5-5
P1		CONNECTOR, PLUG, ELECTRICAL: type MS3106A-24-20P	Control output connector, mates with J1
P2		CONNECTOR, PLUG, ELECTRICAL: type MS3106A-14S-7S	Power input connector, mates with J2
R1		RESISTOR, FIXED, WIREWOUND: 4500 ohms, ±5%, 26 w; MIL-R-26, part/dwg RW33V452	Bleeder resistor Figure 5-5
R4		RESISTOR, FIXED, COMPOSITION: 270 ohms, ±5%, 2 w; MIL-STD-242 part/dwg RC42GF271J	Voltage divider Figure 5-5
R5		RESISTOR, VARIABLE, WIREWUOND: 2 sections, 2000 ohms, ±10%, 4 w each section; MIL-R-39002; mfr 14681, part/dwg 207SC0106	Current control for L201 Figure 5-5

TABLE 7-1A. ANTENNA GROUP AN/SRA-17C, MAINTENANCE PARTS LIST (cont)

RADIO FREQUENCY TUNER TN-418/SRA-17C

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
C203		CAPACITOR, FIXED, MICA DIELECTRIC: 200 uuf, 500 vdc; type CY10C201J, MIL-C-11272	Current shunt Figure 5-6A
C204		CAPACITOR, FIXED, MICA DIELECTRIC: 24 uuf, 500 vdc; type CY10C240G, MIL-C-11272	Current shunt Figure 5-6A
C205		CAPACITOR, FIXED, MICA DIELECTRIC: 510 uuf, 300 vdc; type CY15C511J, MIL-C-11272	Current shunt Figure 5-6A
C206		CAPACITOR, FIXED, MICA DIELECTRIC: 51 uuf, 500 vdc; type CY10C510J, MIL-C-11272	Current shunt Figure 5-6A
J201		CONNECTOR, RECEPTACLE, ELECTRICAL: type MS3102R-24-20P	Provides control input Figure 2-1A
J202		CONNECTOR, RECEPTACLE, ELECTRICAL: type UG-58A/U	Provides signal output to receiver Figure 2-1A
P201		CONNECTOR, PLUG, ELECTRICAL: type MS3108R-24-20S	Control input connector, mates with J201
P202		CONNECTOR, PLUG, ELECTRICAL: type UG-941B/U	Signal output connector, mates with J202

SECTION 7

PARTS LIST

7-1. INTRODUCTION.

Reference designations have been assigned to identify all maintenance parts of the equipment. They are used for marking the equipment (adjacent to the part they identify) and are included on drawings, diagrams, and the parts list. The letters of a reference designation indicate the kind of part (generic group), such as capacitor, resistor, etc. The number differentiates between parts of the same generic group. Sockets associated with a particular plug-in device, such as an electron tube or a fuse, are identified by a reference designation which include the reference designation of the plug-in device. For example, the socket for fuse F1 is designated XF1. The number series associated with each major component of the antenna group is listed below:

Series	Component
1-99	Antenna Control Unit
101-199	Antenna
201-299	Radio Frequency Tuner

7-2. MAINTENANCE PARTS LIST.

Table 7-1 lists all main assemblies and their maintenance parts. The parts of each main assembly are grouped together as described above. Column 1 lists the reference designations of the various parts in alphabetical and numerical order. Column 2 refers to the explanatory note that appears in 7-6 below. Column 3 gives the name and describes the various parts. Complete information is given for all key parts (parts differing from any part previously listed in this table). The name and description are omitted for other parts. However, reference is made to the key part for the data. Column 4 indicates how the part is used and includes the figure number of the pictorial illustration on which the part is identified. (This information will be supplied in the final manual.)

7-3. STOCK NUMBER IDENTIFICATION.

Stock numbers of parts used in this equipment can be obtained by referring to the Stock Number Identification Table (SNIT) published by E. S. O.

7-4. LIST OF MANUFACTURERS.

Table 7-2 lists manufacturers of parts used in the equipment. The first column includes the code used in table 7-1 to identify manufacturers.

7-5. NOTES.

The following provides additional information about items listed in table 7-1.

TABLE 7-1. ANTENNA GROUP AN/SRA-17B, MAINTENANCE PARTS LIST

ANTENNA CONTROL C-2536/SRA-17

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
C1A,B		CAPACITOR, FIXED, ELECTROLYTIC: 10 uf, 450 vdc each section; type CL42F100R, MIL-C-3965.	Power supply Figure 5-5
C2		CAPACITOR, FIXED, PAPER DIELECTRIC: .01 uf, 600 vdc;	R-F bypass Figure 5-5
C3		CAPACITOR, FIXED, PAPER DIELECTRIC: .22 uf, 200 vdc; type CP04A1EF224M, MIL-C-25.	R-F bypass Figure 5-5
DS1		LAMP, INCANDESCENT: 6.3 v, 0.945 w, 0.15 amp, miniture bayonet base, mfr 24455, part/dwg 47.	POWER ON lamp Figure 3-1
DS2		Same as DS1	NOISE GEN ON lamp Figure 3-1
E1		TERMINAL, FEEDTHRU: 3/4 in. dia, 1-1/4 in. O, mica insulated, mfr 74970, part/dwg 135-55	Figure 5-5
E2		Same as E1	Figure 5-5
F1		FUSE, CARTRIDGE: 1 amp, 250 v max, normal instantaneous, glass body, non-indicating, 1-1/4 in. lg, 0.250 in. dia; MIL-F-15160, F02G1R00A, mfr part/dwg MS90078-9-1.	Overload protection Figure 5-5
F2		Same as F1	Overload protection Figure 5-5
J1		CONNECTOR, RECEPTACLE, ELECTRICAL: type AN3102-24-20S.	Provides control output to R.F. Tuner Figure 5-5
J2		CONNECTOR, RECEPTACLE, ELECTRICAL: type AN3106-14S-9S.	Provides power input cable termination Figure 5-5
L1		CHOKE, FILTER: 85 ma current rating, designed for use at 120 cps, 3-9/16 in. h by 2-3/8 in. w by 2-1/2 in. d, two terminals; MIL-T-27A, mfr 12080, part/dwg RH-1085.	Filter Figure 5-5
P1		CONNECTOR, PLUG, ELECTRICAL: type AN3106-24-20P	Control output connector, mates with J1
P2		CONNECTOR, PLUG, ELECTRICAL: type AN3102-14S-9P	Power input connector, mates with J2

TABLE 7-1. ANTENNA GROUP AN/SRA-17B, MAINTENANCE PARTS LIST (Cont)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
R1		RESISTOR, FIXED, WIREWOUND: 3500 ohms, ±5%, 26 w; MIL-R-26, part/dwg RW33V352	Bleeder resistor, Figure 5-5
R2		RESISTOR, FIXED, COMPOSITION: 200,000 ohms, ±5%, 2 w; JAN-R-11, part/dwg RC42GF204J.	Voltage dropper, Figure 5-5
R3		RESISTOR, FIXED, COMPOSITION: 5600 ohms, ±5%, 2w; JAN-R-11, part/dwg RC42GF562J.	Voltage drop for relay circuit Figure 5-5
R4		RESISTOR, FIXED, COMPOSITION: 820 ohms, ±5%, 2w; JAN-R-11, part/dwg RC42GF821J	Voltage divider Figure 5-5
R5		RESISTOR, VARIABLE: wirewound, 2 sections, 2000 ohms, ±10%, 4 w each section; MIL-R-19, mfr 02111, part/dwg 830	Current control for variable inductor L201 Figure 5-5
R6		RESISTOR, FIXED, COMPOSITION: 10000 ohms, ±5%, 2w; JAN-R-11, part/dwg RC42GF103J	Dummy load for relays Figure 5-5
R7		RESISTOR, FIXED, COMPOSITION: 20000 ohms, ±5%, 2 w; JAN-R-11, part/dwg RC42GF203J	Dummy load for relays Figure 5-5
R8		Same as R6	Dummy load for relays Figure 5-5
R9		Same as R6	Dummy load for relays Figure 5-5
R10		RESISTOR, FIXED, COMPOSITION: 1200 ohms, ±5%, 1 w; JAN-R-11, part/dwg RC30GF122J.	Current limiter, Figure 5-5
R11		RESISTOR, FIXED, COMPOSITION: 2000 ohms, ±5%, 1 w; JAN-R-11, part/dwg RC30GF511J.	Current limiter, Figure 5-5
R12		RESISTOR, FIXED, COMPOSITION: 2400 ohms, ±5%, 1 w; JAN-R-11, part/dwg RC30GF242J.	Current limiter, Figure 5-5
R13		RESISTOR, FIXED, COMPOSITION: 5100 ohms, ±5%, 2 w; JAN-R-11, part/dwg RC42GF512J.	Current limiter, Figure 5-5

TABLE 7-1. ANTENNA GROUP AN/SRA-17, MAINTENANCE PARTS LIST (Cont)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
S1		SWITCH, TOGGLE: electrical ratings per JAN-S-23, lever type, 2 solder lug type terminals, 1 mtg hole 1/2 in. dia; part/dwg ST42A	POWER ON-OFF switch Figure 3-1
S2		SWITCH, TOGGLE: 4 PDT, 125 v, 15 amps, lever type, 2 solder lug type terminals, 1 mtg hole .068 in. dia, neoprene insert; part/dwg MS25068-23.	NOISE GEN ON-OFF switch Figure 3-1
S3		SWITCH, ROTARY: 2 sectional type, 2 poles per section, 4 positions per section, 2 amps at 15 vdc, flush mounted, 1 mtg hole 3/8 in. dia; mfr 71590, part/dwg 2514M.	Frequency range selector Figure 3-1
S4		SWITCH, INTERLOCK: JAN-S-63, mfr 81349, part/dwg SS05A70.	Safety cutout Figure 3-2
T1		TRANSFORMER, POWER, STEP-UP: MIL-T-27A, mfr 12080, part/dwg PHC-85.	Provides secondary power for equipment Figure 5-5
TB1		TERMINAL BOARD: 7-3/16 in. lg, 1-5/8 in. wide, phenolic paper-type, PBE base, grade XXX, mfr 06053, part/dwg 184A00058	Component mounting Figure 5-5
V1		TUBE, ELECTRON: full wave rectifier, receiving; JAN 5Y3WGTA.	Power rectifier Figure 5-5
V2		TUBE, ELECTRON: voltage regulator, receiving; JAN OB2WA.	Voltage regulator Figure 5-5
XDS1		LAMPHOLDER: for type no. 47 lamp, red jewel; mfr 72619, part/dwg 835B410-WXPS-111	Holder for POWER lamp Figure 5-5
XDS2		LAMPHOLDER: for type no. 47 lamp, white jewel; mfr 72619, part/dwg 835B410-WXPS-117	Holder for NOISE GEN lamp Figure 5-5
XF1		FUSEHOLDER: extractor post type, max elec rating 250 v, 18 amp, MIL-F-19207; mfr 03614, part/dwg FD-1.	Holder for fuse F1 Figure 5-5
XF2		Same as XF1	Holder for fuse F2 Figure 5-5

TABLE 7-1. ANTENNA GROUP AN/SRA-17, MAINTENANCE PARTS LIST (Cont)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
XF3		FUSEHOLDER: block type, max 250 v, 50 amp; mfr 03614, part/dwg 4405.	Holder for spare fuse Figure 5-5
XV1		SOCKET, ELECTRON TUBE: octal, 8 pin; JAN-S-28A, type TS101P01.	Holds V1 Figure 5-5
XV2		SOCKET, ELECTRON TUBE: octal, 7 pin; JAN-S-28A, type TS102P01.	Holds V2, Figure 5-5

RADIO FREQUENCY TUNER TN-334/SRA-17

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
C201		CAPACITOR, FIXED, PAPER DIELECTRIC: .47 uf, 200 vdc; type CP08A1KC474M, MIL-C-25.	R-F bypass Figure 5-6
C203		CAPACITOR, FIXED, MICA DIELECTRIC: 200 uuf, 500 vdc; type CM15E201J, MIL-C5.	Current shunt capacitor Figure 5-6
C204		CAPACITOR, FIXED, MICA DIELECTRIC: 24 uuf, 500 vdc; type CM15E240J, MIL-C-5.	Current shunt capacitor Figure 5-6
C205		CAPACITOR, FIXED, MICA DIELECTRIC: 510 uuf, 300 vdc; type CM15E511J, MIL-C-5.	Current shunt capacitor Figure 5-6
C206		CAPACITOR, FIXED, MICA DIELECTRIC: 51 uuf, 500 vdc; type CM15E510J, MIL-C-5.	Coupling capacitor Figure 5-6
C207		CAPACITOR, FIXED, PAPER DIELECTRIC: .01 uf, 100 vdc; type CP09A1EB103M, MIL-C-25.	Noise bypass Figure 5-6
CR201		SEMICONDUCTOR DEVICE, DIODE: silicon; mfr 04655, part/dwg IN21B.	Noise source Figure 5-6
K201		RELAY: double throw, 2 pole, 80 v, dc coil, 10000 ohms, hermetically sealed; MIL-R-5757D, mfr 82415, part/dwg 5409-2HS.	Switch r-f output Figure 5-6
K202		Same as K201	Switch shunt capacitors Figure 5-6

TABLE 7-1. ANTENNA GROUP AN/SRA-17, MAINTENANCE PARTS LIST (Cont)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
K203		Same as K201	Switch noise or r-f signals to radio Figure 5-6
L201		INDUCTOR, TUNED: designed for operation between 14 kc and 600 kc; mfr 88769, part/dwg XR-9020	Series tune antenna Figure 5-6
R201		RESISTOR, FIXED, COMPOSITION: 200 ohms, ±5% 1/2 w; JAN-R-11, part/dwg RC20GF201J.	Crystal diode load Figure 5-6
R202		RESISTOR, FIXED, COMPOSITION: 100,000 ohms, ±5%, 1/2 w; JAN-R-11, part/dwg RC20GF104J.	Current limiter Figure 5-6
S201		Same as S4	Safety cutout Figure 5-6
XCR201		HOLDER, DIODE: beryllium copper contacts, silver plated, 2 mtg holes .065 in. dia, 5/16 in. h by 5/16 in. w by 1-1/4 in. lg; mfr 91506, part/dwg EX-62-60C.	Holds diode CR201 Figure 5-6

ANTENNA AT-924A/SR

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
H101		WASHER, CUP: mfr 06053, part/dwg 184C00111.	Figure 5-7
MP101		BOWL, CERAMIC: mfr 06053, part/dwg 184D00117-2.	Figure 5-7
MP102		RING, MOUNTING: mfr 06053, part/dwg 184C00095.	Figure 5-7
MP103		RETAINING RING, MOUNTING: mfr 06053, part/dwg 184C00094.	Figure 5-7
MP104		GASKET: mfr 06053, part/dwg 184B00112.	
MP105		GASKET: mfr 06053, part/dwg 184A00116.	
MP106		"O" RING: part number MS29513-258.	
MP107		"O" RING: part number MS25913-253.	

TABLE 7-2. ANTENNA GROUP AN/SRA-17, list of manufacturers

CODE NO.	NAME	ADDRESS
03614	Bussmann Manufacturing Company	Los Angeles, Calif.
04655	Sylvania Electric Products	
12080	Chicago Transformer Division of Essex Wire Corp.	
15605	Cutler Hammer, Inc.	Milwaukee, Wisc.
24455	General Electric Co. Lamp Division	Nela Park, Ohio
71279	Cambridge Thermionic Corp.	Cambridge, Mass.
71450	Chicago Telephone Supply Co.	Elkhart, Ind.
71590	Centralab Division of Globe Union, Inc.	Milwaukee, Wisc.
72619	Dial Light Company of America, Inc.	New York, N.Y.
82415	Price Electric Company	Frederick, Md.
88769	CGS Labs, Inc.	Stamford, Conn.
91506	August Brothers, Inc.	Attleboro, Mass.
06053	Decitron Electronics Corp.	Brooklyn, N.Y.

INDEX

SUBJECT	PARAGRAPH (Figure) *Table
A	
Antenna, location of parts	(5-7)
Antenna control unit:	
Control and indicator locations	(3-1)
Location of parts	(5-5)
Tube and fuse locations	(3-2)
Voltage and resistance diagram	(5-9)
Wiring diagram	(6-3)
Antenna Group:	
Block diagram of maintenance standards tests	(6-1)
Electron tube complement	*1-4
Equipment required but not supplied	*1-2
Equipment supplied	*1-1
List of manufacturers	*7-2
Maintenance parts list	*7-1
Outline drawing	(2-1)
Overall functional block diagram	(4-1)
Primary power distribution	(5-8)
Relationship of units	(1-1)
Schematic diagram	(6-2)
Semiconductor diode complement	*1-5
Shipping data	*1-3
System trouble-shooting chart	*5-1
Antenna tuning circuits:	
Functional section trouble-shooting	5-3, *5-4
Principles of operation	4-4
Schematic diagram	(4-4), (5-3)
C	
Coaxial cable termination	(2-2)
Controls and indicators	3-2, (3-1), *3-1
E	
Equipment lists	1-4
F	
Factory changes	1-2
Failure report	6-1
Functional description	1-1
Functional operation	3-1
I	
Inspection and adjustments	2-5
Installation:	
Layout	2-3
Procedures	2-4
M	
Maintenance parts list	7-2, *7-1
Maintenance Standards	6-4, *6-2
N	
Noise source:	
Functional section trouble-shooting	5-7
Principles of operation	4-5
Schematic diagram	(4-5), (5-4)
O	
Operating procedure	3-3
Operator's maintenance	3-4
Overall functional description	4-1
P	
POMSEE	*6-1
Power requirements	2-2
Power supply:	
Functional section trouble-shooting	5-4, *5-1
Principles of operation	4-2
Schematic diagram	(4-2), (5-1)
Preventive maintenance	6-3
Preventive maintenance check off	6-7
R	
Reference data	1-3
Repair	6-8
Radio frequency tuner:	
Location of parts	(5-6)
Wiring diagram	(6-4)

S	PARAGRAPH (Figure) *Table
Starting procedure	3-3
Stock number identification	7-3
Stopping procedure	3-3
Switching circuits:	
Functional section trouble-shooting	5-5, *5-3
Principles of operation	4-3
Schematic diagram	(4-3), (5-2)

T	PARAGRAPH (Figure) *Table
Test equipment	5-2
Tests for establishing reference standards	6-6
Trouble-shooting	5-3
Tuning procedure	3-3
Typical troubles	5-8